

# American Forestry

MAY

1911

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By WALTER K. WILDES

## FOREST FIRES IN NORTH AMERICA

By DR. E. DECKERT

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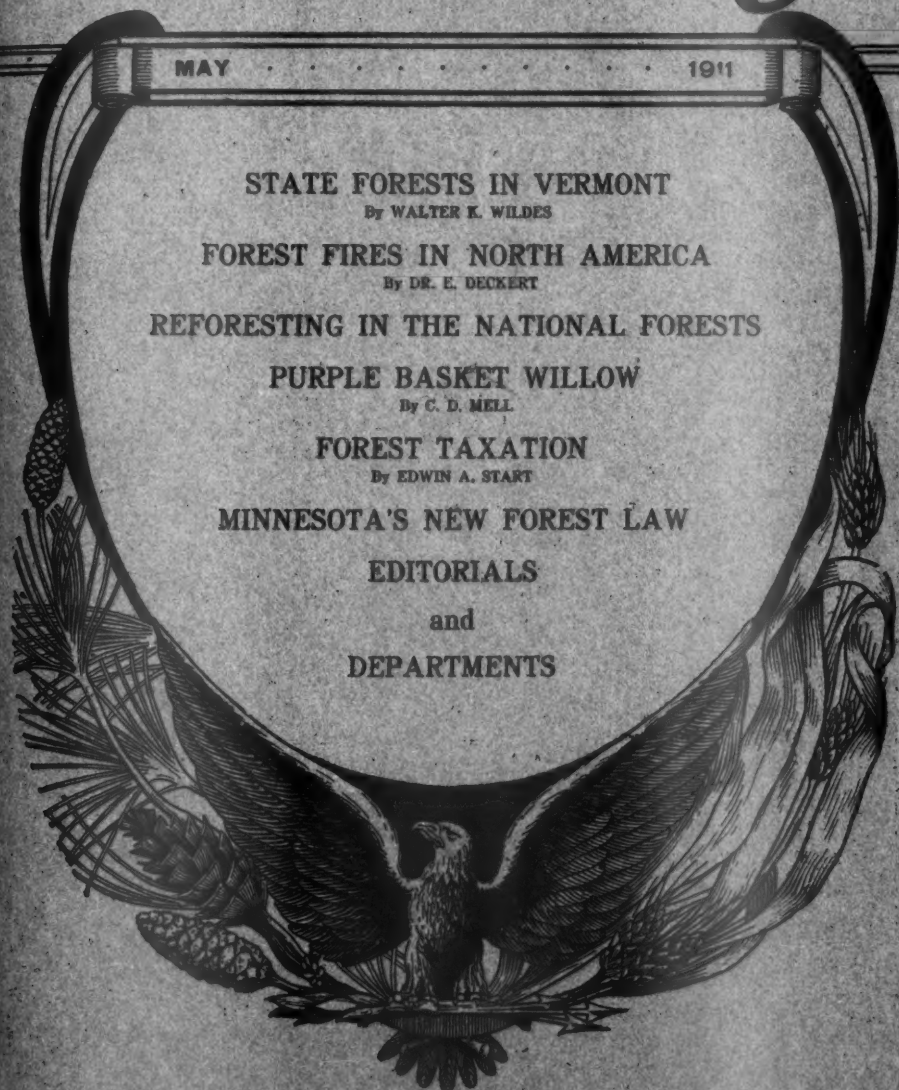
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*The Magazine of the American Forestry Association*

EDWIN A. START, EDITOR

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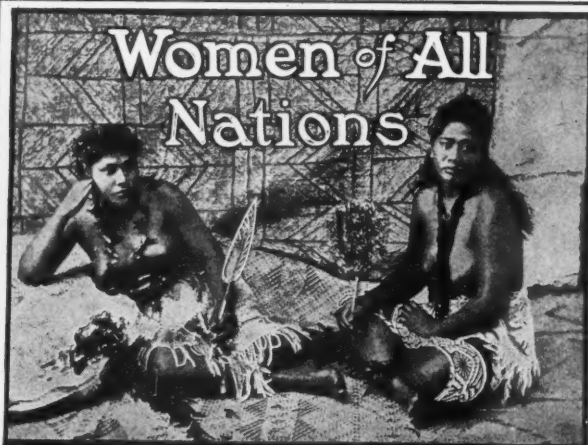
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STARR KING



THE CRAWFORD NOTCH

A WINTER VIEW, LOOKING SOUTH. THE RAILWAY LINE  
SHOWS ON THE RIGHT AND THE CARRIAGE ROAD  
ALONG THE VALLEY FLOOR. SEE PAGE 293



# American Forestry

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VOL. XVII

MAY, 1911

No. 5

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## STATE FORESTS IN VERMONT

By WALTER K. WILDES

VERMONT'S need of and uses for state forests are emphatic. The initial step to meet this need and to acquire areas suitable and available for state forests and the consequent development of this phase of the state forestry policy, was taken up by the legislature of 1908. At this time an act was passed creating a Board of Agriculture and Forestry consisting of four members—two ex-officio, the Governor and the Director of the State Experiment Station, and two to be appointed by the Governor. This board has the authority "to accept gifts of land to the state, to be held, protected and administered as a state forest reserve" and "to purchase lands in the name of the state" for the same purpose.

Such areas in a state possessing the physiographic features of Vermont, together with the natural beauty and scenery to attract many thousands of tourists and summer residents, will naturally be divided into three distinct classes, namely, demonstration forests, protection forests and areas that serve primarily as parks. Each class is represented in the four tracts now owned by the state of Vermont.

From the standpoint of the development of a state forestry policy the demonstration forest is first in importance. All such areas need not necessarily be forested for they serve in two essential capacities, the one to illustrate proper forest management and natural reproduction primarily; the other to illustrate the methods and results of reforesting areas with desirable species by artificial methods. In the former, thinnings of the proper intensity and species are made, either for the immediate improvement of the stand or to provide for such reproduction as the site and existing desirable species will allow. Another important advantage of such areas, where lumbering is practical, is to convince local operators that scientific cutting is profitable; that it is not necessary to cut clean in order to realize a legitimate return. Often times a contractor is skeptical when he is asked to figure on a cut where only marked trees are to be removed or where lopping and piling coniferous tops, in order to eliminate as far as possible the danger from fire, is demanded, or where closer utilization is required. Both owners and contractors learn, after an actual operation, that the extra expense imposed by the above conditions is only a very small percentage higher than the cost based upon the usual methods and that this excess is amply justified by the results.

On the latter areas, such as have been clear cut or burned over and are either not reproducing at all or with undesirable species or old pasture land that is producing only a small annual return per acre, reforestation operations appeal strongly to the people of almost all communities. It creates a more direct response and interest in forestry than any other phase of the work.

The first purchase of land as authorized by the Act of 1908 was made in the autumn of 1909, when the L. R. Jones State Forest at Plainfield was acquired. At the same time the state came into the possession of the Downer State Forest at Sharon by gift. Early in the present year two more areas were added, one given by the Hon. M. J. Hapgood at Peru, the other by Col. Joseph Battell near Huntington.

The development of this policy will be continued in various parts of the state as money and the disposition of those interested in granting similar areas will allow.

#### THE DOWNER STATE FOREST

This area of 310 acres, the gift of Mr. Charles Downer, comprises the following types:

Woodland .....	90 acres
Tillable .....	50 acres
Pasture .....	150 acres
Apple Orchard.....	5 acres
Swamp .....	15 acres

For a considerable period this tract will serve as a demonstration and experimental area, where improvement and reproduction cuttings will be made; plantations of various species, spacing and combinations set out; and silvical studies of several species, more especially sugar maple, will be carried on from year to year. It is the wish of the donor that a part of the area be utilized as a game preserve. The area is rough but not rugged, varying in elevation from 1400 to 1800 feet. The variation in soil conditions from swamp to the dry, thin soil at the highest elevation, gives a wide range for planting experiments and choice of species.

The woodland consists for the most part in sugar maple, varying in age from seedlings to over maturity. Other species are basswood, yellow birch, beech, ash, white birch, poplar, ironwood and hemlock. The minimum stand per acre is two cords, the maximum 6,000 board feet and 45 cords.

The treatment of the various blocks will include reproduction and improvement thinnings; the selection system; and the final cuttings of the stand system. All are advised with the idea of favoring either maple alone or maple, basswood and ash collectively.

A forest nursery was established in the spring of 1910. It will serve as a distributing point for that part of the state and, at the same time, provide stock for state planting. Only half an acre is now in nursery but this will be increased each year. There were planted in the nursery in the spring of 1910: 13,500 two year old white pine seedlings; 20,000 two year old red pine seedlings; 15,000 one year old white pine seedlings. Twenty-five pounds of white pine seed was sown. In 1911 fifty pounds of white pine and twenty pounds of Norway spruce seed will be sown. In addition 50,000 two year old white pine and 3,000 Austrian pines will be transplanted from the state nursery at Burlington. In 1910 plantations set out on final sites totaled 34 acres, consisting of: 12,000 four year old white pines; 7,000 four year old red pines; 10,000 three year old Scotch pines; 5,000 four year old Norway spruce.

In 1911 and 1912 ninety-four acres will be added to the area already planted and the following species used, in addition to those already named: Black walnut, black locust, white ash, red oak, European larch, basswood, Adirondack spruce and hickory. This gives a total area of 128 acres in plantations. Their purpose is to provide information relative to the effect on growth of different spacing, of pure and mixed stands, and the adaptability of the species to soil and altitude. In the final allotment of areas there will be:

Woodland .....	90 acres
Plantation .....	128 acres
Pasture .....	30 acres
Tillable .....	50 acres
Apple Orchard.....	12 acres

The area of pasture land will thus be reduced from 150 to 30 acres and the orchard increased from 5 to 12 acres. A complete system of trails will be constructed. These will lead to the different plantations and through several blocks of woodland.

The danger from fire, which is inconsiderable, has been provided for by limiting the extent of area of pure coniferous plantations and maintaining a fire line 100 feet wide at the most dangerous point.

#### THE L. R. JONES STATE FOREST

The L. R. Jones State Forest is an area of a different type and will be used more to illustrate proper lumbering methods and provisions for natural reproduction, together with plantations.

This area consists of 500 acres, 400 being purchased in the autumn of 1909 and 100 in the autumn of 1910. Of this total area there are 135 acres to be planted and 365 acres of woodland, thus utilizing the total area as forest land. Much of this area has been lumbered but there is still a considerable amount to come out. In the autumn of 1910 60,000 board feet of spruce and hardwoods were marked. The cutting will be completed by January, 1911. This material is cut, skidded and hauled, five miles, at \$7.00, and is being sold at \$10.00 per thousand, leaving a profit of \$3.00 per thousand, which is fairly satisfactory considering the small size of the material and the difficulty of cutting in dense spruce thickets.

There are two types of woodland. Hardwoods consisting of white and yellow birch and maple and beech from which the spruce and fir have been cut, comprise about 215 acres. The spruce and fir type, comprising about 135 acres, is an area formerly in pasture land or clean cut about twenty years ago, and since reclaimed by this growth. There is also a small area of older pure spruce that will be marked and harvested as soon as possible. The area is rugged, having a variation of elevation of 900 feet with considerable granite outcrop.

In the spring of 1910 there were planted 25,000 four year old white pines and 10,000 three year old Norway spruce. This work will be continued for the next three years, by which time the total open area will be planted with white pine, Norway spruce and arborvitae.

Lumbering operations will go on each fall, taking out the material marked during the summer. The maximum coniferous stand per acre is 18,000 board feet and 30 cords. The maximum hardwood stand per acre is 5,000 board feet and 15 cords. This area will consequently be upon a revenue producing basis considerably before the Downer State Forest.

There is already a very good road system, to which an extension has been staked out, running across the plantation made in 1910.

Because of the recent acquirement of the two areas last mentioned no plan for management has been formulated. They differ, however, in the possibilities for their development and use for forestry purposes, as they were given with certain restrictions, which will detract from their value as such.

The gift of Mr. Hapgood comprises 106 acres and includes the summit of Bromley Mountain in Peru; that of Mr. Battell contains about 800 acres, including Camel's Hump, one of the highest points in the state. These tracts will serve primarily for protective and park purposes.

## TAXATION OF FOREST LANDS

### *A Review of Recent Studies in New Hampshire and Wisconsin*

BY EDWIN A. START

THE vital importance to forestry of the question of taxation of forest lands is generally recognized and the subject is frequently attacked by foresters, lumbermen, economists and legislators; but so far without any tangible results. The crude remedy of exemption has been tried by some states but never with success. Attempts to remedy the recognized evils have been occasionally made but these have generally run upon the rock of unconstitutionality. For instance, in Massachusetts it was found that any application of sound principles to forest taxation would conflict with the provision of the state constitution, a provision which appears in many other state constitutions, which requires equal and proportionate taxation of all classes of property. The Massachusetts Forestry Association, therefore, united with the Boston Chamber of Commerce in an effort to secure a constitutional amendment providing for classification of property for purposes of taxation. So far this movement has been headed off by the innate conservatism of the state.

We are not in a position in this country to apply the elaborate methods of forest taxation that are in operation in Europe, because our forest conditions are so different and we have not a sufficient body of trained men of technical knowledge to administer laws based upon such knowledge; but it is admitted that we must do something and we are thus thrown at once upon the necessity of a thorough study of our own conditions and the evolution of a system applicable to them. Two comprehensive studies have been made by Forest Service experts cooperating with state officers, and the results have been published. The first of these was made by J. H. Foster in New Hampshire in 1908. The second, the results of which have just been published, was made by Alfred J. Chittenden and Harry Irion in Wisconsin in 1910.

These states are geographically wide apart and different conditions are found in them, but it is curious to note the parallels between them and how closely the two taxation studies run with each other. In both states lumbering and pulp and paper making are industries of great importance. Both states divide naturally into two sections—a southern agricultural district, where forests chiefly exist in the form of farm wood-lots, and an extensive northern district where natural forest lands predominate. In both the northern type of forest is the prevailing one, though the hard-wood belt reaches up across south-



*Photo by A. F. Hawes*

VIEW SHOWING BUILDINGS IN THE DOWNER  
STATE FOREST

STATE FORESTS IN VERMONT



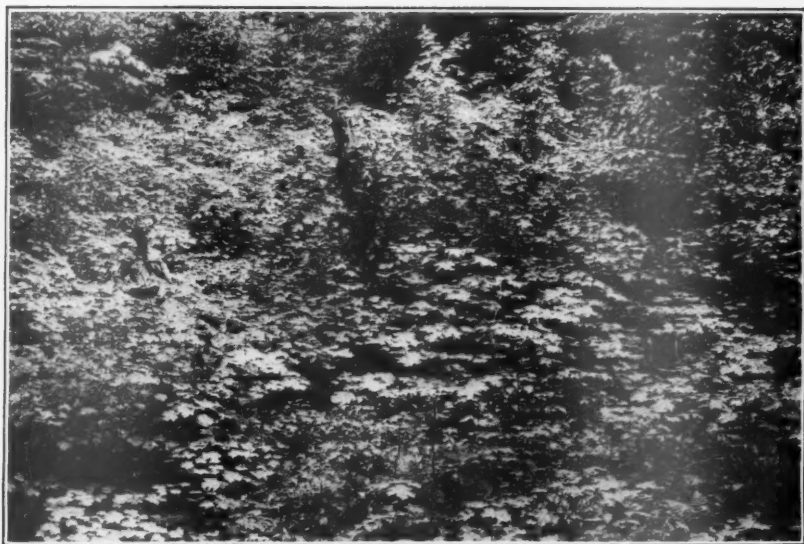


*Photo by A. F. Hawes*  
RED PINE PLANTATION MADE IN SPRING OF  
1910. DOWNER STATE FOREST



STATE FORESTS IN VERMONT

*Photo by A. F. Hawes*  
FOREST NURSERY. TRANSPLANTS OF RED AND  
WHITE PINE. DOWNER STATE FOREST



*Photo by A. F. Hawes*

NATURAL REPRODUCTION OF SUGAR MAPLE,  
THREE TO TEN FEET HIGH. DOWNER STATE  
FOREST



*Photo by A. F. Hawes*

STATE FORESTS IN VERMONT

YOUNG MAPLE ORCHARD THINNED TO HELP  
GROWTH OF BEST TREES. DOWNER STATE  
FOREST



*Photo by A. F. Hawes*  
GENERAL VIEW IN L. B. JONES STATE FOREST.  
NOTE EVERGREENS RECLAIMING OLD PASTURE

STATE FORESTS IN VERMONT

ern and central Wisconsin. In general it may be said that the conclusions of the investigators in regard to existing conditions and desirable changes were very similar.

Both of them start off with the statement that owing to the difference between the agricultural and wild land portions of the states, the study of taxation and of the fire problem falls naturally into two divisions. Mr. Foster, in his earlier report, reached the general conclusions that "(a) the actual tax burdens imposed on forest lands of the same value are not equal or proportionate as the state constitution requires, either as between the different towns, or different tax payers in the same town. (b) In general the law has not been strictly enforced in the past as is shown by the fact that little land reverts to the town because of unpaid taxes. Sometimes an owner believes that the tax is more than the land can stand but in such cases a purchaser has always been found. This is due to the fact that growing timber has usually been assessed much below its actual market value and the burden of taxation thus has been lighter so that the lands can carry it. (c) In the search for revenue to meet the natural necessities of the town a strong tendency has recently developed to enforce the law more rigidly and valuations have in many cases been increased with startling rapidity. This rapid increase in valuation cannot be long continued and applied to these cut-over lands after the owner has been forced to cut without causing abandonment. Such has been the result of the policy in California and in Michigan where the state has acquired and owned a million and a quarter acres of abandoned tax lands, and to a less extent, in other Lake states. (d) As between the farmer and the mill-man, to whom he sells his wood-lot, taxes have in the past been very low to the farmer while the timber was in his hands and some attempt has been made to appraise it at more nearly its actual value, or rather to approximate the selling price, which is often unduly low, when it is bought for lumbering. Usually, however, it is cut at once and the town collects taxes at the new appraisal but one year if at all. The consequence is that the timber escapes its fair share of the public burden. (e) The present law, granting a percentage exemption to owners who have planted their land to timber, is not taken advantage of to any extent and is wholly inadequate. Most of the land upon which there is growing timber is seeded naturally and therefore does not come within the law. The exemption ceases wholly in thirty years, at the time when it is to the advantage of the town as well as of the owner to let it mature further. Moreover, tax exemptions are of questionable advantage and excite hostility to those taking advantage of them."

This statement of general conclusions resulting from an examination of New Hampshire conditions will be recognized by residents of other states who have had occasion to look into this matter of the taxation of forest lands. So closely do the conclusions of the Wisconsin report follow those that have just been quoted from New Hampshire that it is unnecessary to repeat the latter. The differences are only in minor points.

In discussing the question of how forest property in New Hampshire should be taxed, Mr. Foster calls attention to the fact that if the land tax is to be equal as between different land owners, it must take one of three forms: (1) a uniform percentage of the actual sale value of the property as it stands; (2) a uniform percentage of the actual income from the property; (3) a uniform percentage of estimated power of the soil for potential income. He then notes that in this country the first form is the one in use, although the assessment of agricultural lands in actual sale value is generally placed unconsciously upon the fertility of the soil for its potential yield. The assessment of forest lands is based upon their supposed actual sale value, but the

land itself is not considered. It is the value of the growth upon the land which indicates its sale value. Agricultural crops, being harvested annually, escape taxation entirely. Forest lands, therefore, are not taxed upon the same basis as agricultural lands, although there is no provision in the law for such distinction. Herein, of course, is one of the essential elements of injustice in the taxation of forest lands, as it is applied generally in our agricultural communities. The second and third forms of taxation, as analyzed in the statement above, are applied in Europe to a large extent and forest taxation is much more equitable there and this tends to promote good forestry. "In this country," says Mr. Foster, "the system of assessing property at its actual sale value and taxing it at a uniform percentage of that value works well enough when applied to agricultural land; but when applied to growing forests it is both unjust and unwise. It is unjust because it ignores the fact that growing timber, before it is large enough for market, has only a prospective value and the income or return can only be obtained at long intervals. It is unwise, because the system often forces the owner to cut the timber before it is mature." Later on the author calls attention to the danger of the present law if it is enforced to the letter. Should it be applied to growing timber lands generally, there would be, he says, a tremendous slaughter of half-grown timber.

In this connection, there may be cited by way of illustration, a case which arose a few years ago in a northern state in which a non-resident owner of a thousand acres of timberland in a rural town had his valuation raised from \$7,500 to \$22,500, that is, the valuation was tripled in one year without warning and the owner had no redress against this arbitrary action of the local board of assessors. The laws of this state are those in common application in most of our eastern states and this thing can be done almost anywhere. It raised a serious question with this owner as to whether he should cut off the timber and dispose of the land or not. He was a public spirited gentleman, interested deeply in forestry, and had held the land rather for the public benefit than for his own.

The New Hampshire report states the requirement of the situation there as follows: "What is needed in this state is a method of taxing forest lands which can be administered by the towns in conformity with the established function and procedure of our local government; which insures an annual revenue while the timber is immature commensurate with that formerly derived with the low appraisal of immature timber held by farmers and others; which imposes a fair burden upon the timber crop when it is cut and collects it from the person who cuts and sells the timber. This burden will be a tax on the yield or income and not on the land or capital. It should, therefore, be relatively high. To prevent speculative holdings without taxing of land chiefly valuable for residence, manufacturing or farming purposes, the law should be restricted to lands found by the selectmen and assessors to be chiefly valuable for the production of wood and timber. Timber cut from land so classified should be taxed when it is severed from the land and should not be removed until a tax of 15 per cent of the value of such timber has been assessed and collected by the selectmen, or proper security shall have been given to them. Finally, since timber now half-grown or mature has presumably been taxed in accordance with the present law, and since it is desirable to introduce the new system gradually, the new method of taxation should be applied only to forest tracts upon which forest growth has recently started, and then only at the option of the land owner." Following this, the report suggests a form of act covering its recommendations and this was made the basis of a bill in the New Hampshire legislature which, however, failed to pass.

This draft provided for the separate classification for taxation of land chiefly valuable for the production of wood or timber, and occupied by a natural



or planted growth of trees, approximately three-fourths of which do not exceed the age of ten years. The land so classified and recorded according to provisions specified in the act, is to be assessed annually at the average value per acre, exclusive of the value of any wood or timber thereon. The timber and wood removed from any such tract is to be assessed for the year following the first of April after such cutting at the uniform and equal rate of 15 per cent of the appraised value on the stump. There is an exemption of \$25 in value in any one year of wood cut for home use on a farm. The act provides in great detail for the carrying out of these main provisions.

The Wisconsin report, which is somewhat more extended than its predecessor, although following the same general plan, after a description of forest conditions in the several counties of the state and the citation of numerous actual examples of forest taxation, considers the methods of assessing timber lands. In this respect Wisconsin seems to labor under about the same conditions as other states. There are the same elastic interpretations of the law, the same inequalities of administration, and the same incompetence frequently on the part of local officials. The views of lumbermen are given and make an interesting feature of the report. The relation of fire protection to the taxation question is discussed, for it is well understood that these two must go together. Probable returns from forest investment are considered and tables are given to show the possible returns by decades in periods from thirty to eighty years. The authors note that the fact that taxation has not materially affected lumbering in Wisconsin in the past is no indication that it will not in the future, and they say plainly that "the possibility of the practice of forestry by private owners depends on two things—an equitable system of forest taxation and protection from forest fire." In making recommendations for legislation in Wisconsin the proved inefficacy of bounties and exemption is noted. For the encouragement of the cultivation and care of wood-lots, it is suggested that owners may have tracts not exceeding forty acres separately classified for taxation by application to the state board of forestry under whose direction all cutting and removal of trees shall take place. Such land is not to be assessed at exceeding ten dollars per acre and taxed annually on that basis. Before any timber is removed from the land the owner shall pay to the proper county officer an amount equal to ten per cent of the stumpage value of the timber, provided that any material which is actually used for domestic purposes by the owner or his tenant shall not be subject to such a tax. This plan, it is explained, is to encourage and make it profitable for the small owner, especially the farmer in the agricultural district to utilize a part of his land for the production of wood and timber.

For private forests without limitation as to area it is also suggested that they may be separately classed for taxation, such classification being subject to the determination of the state board of forestry as to whether or not the land is suitable for timber growing. If it is decided to be suitable for that purpose, in making the assessment the land shall not be valued at more than one dollar per acre and the assessors shall in no case take into account the value of the growing timber. Whenever any timber or wood is cut from such land the owner shall be required to pay an amount equal to ten per cent of the gross value on the stump of the wood and timber so cut. There are various provisions for making proper returns and securing the state and penalties for making false returns. The report says that "conditions in Wisconsin indicate that a tax on the yield together with a nominal, annual tax on the land, is superior to any of the various tax laws that have from time to time been proposed." The authors, however, express their opinion that it would be better if no annual tax were levied on the land and the whole tax were made upon the yield, but

the objection to this is the usual one that it might disturb the fiscal affairs of the community.

It will be seen that the recommended legislation for these two states while showing slight differences in application is on the same general principle, and this, it may be added, is the only method that has yet been proposed that seems to be adapted to present American conditions.

In conclusion, the report does not hold out any great hope that private forestry on a large scale would be extensively promoted even with such an adjustment of the tax laws. The authors believe that for a future permanent timber supply the main dependence must be upon state ownership and it is recommended that the state secure by purchase in the open market such lands as it is desirable for it to own for this purpose.

These two reports will be found an interesting study by all those who are interested in this important public question of the taxation of forest lands. It will be seen even from this somewhat cursory review that the conditions and conclusions are not materially different from those which have been found by other students of the subject in various eastern states. The final result of all such studies seems to be the necessity of adequate fire protection by the state in order that property in forest lands may have in a measure the same security that other property enjoys; equitable taxation, so that owners of such property will not feel obliged to cut over their lands and dispose of a crop which is unprofitable to them, although it may be needed by the state; and finally that we must come ultimately to the same end as the most progressive European states and include as state property lands which are valuable only for the purpose of growing forests and which, therefore, have a greater value to the community than to any individual. When the main object was to clear the land of the forests, such a condition as this did not exist, it was unnecessary for the state to intervene, although it might well have done so at an earlier date; but now that the necessity of husbanding our forests for a future timber supply and protecting our water sheds for the permanence of a water supply and the equable flow of our streams is generally recognized, our attitude toward forest lands and the question of state ownership of such lands, must be radically changed. Such lands can be handled to the best advantage by a well organized department directed by experts and doing its work on a large scale. In most cases, especially in our populous states, the state is the only agent through which this work can satisfactorily and economically be done.



## *Reforestation in the National Forests*

*Tree planting is not a leading activity in the national forests, but it has its place, which is one of increasing importance. In March we published an article on the harvesting of the annual seed crop in the national forests. The accompanying series of pictures illustrating various processes in the work of artificial reforestation, from the national forests in several states, will give an idea of the nature of this interesting work.*



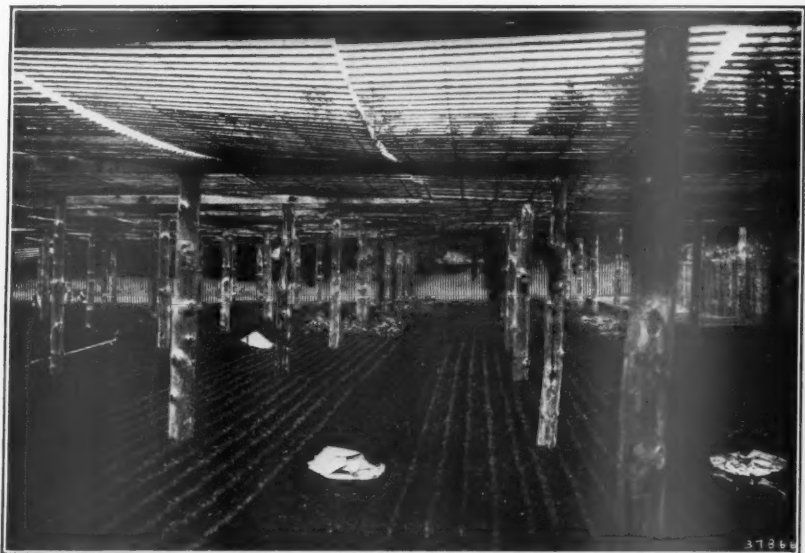
DRYING CONES IN SUNSHINE. WASATCH NATIONAL FOREST, UTAH



IN FOREGROUND TRANSPLANT DOUGLAS FIR SEEDLINGS, ONE YEAR OLD, TWO INCHES HIGH; IN BACKGROUND, TRANSPLANT WESTERN YELLOW PINE SEEDLINGS ONE YEAR OLD, TWO AND ONE HALF INCHES HIGH. NURSERY, WASATCH NATIONAL FOREST, UTAH



A PLOT IN THE FREMONT EXPERIMENT STATION, MANITOU, COLORADO, SOWN JULY 23, 1910, BROADCAST AFTER HARROWING, WITH YELLOW PINE SEED, 18.59 POUNDS PER ACRE. THIS PLOT SHOWED 819 SEEDLINGS ALIVE AND 21 DEAD. EACH SEEDLING IS MARKED WITH A STICK



SEED BEDS AT PLANTING STATION NEAR PALMER LAKE, PIKE'S  
PEAK NATIONAL FOREST. DRILLS ARE SIX INCHES APART  
AND STAND VARIES FROM 70 TO 150 PER SQUARE FOOT OF  
DOUGLAS FIR, AND 40 TO 60 OF YELLOW PINE



SPRAYING APPARATUS AT WORK IN TWO-YEAR-OLD SCOTCH  
PINE SEEDLINGS, NEBRASKA NATIONAL FOREST NURSERY,  
THOMAS COUNTY, NEBRASKA



SECTION OF TRANSPLANT BEDS, PARTIALLY  
SHADED BY OLIVE TREES, SAN MARCOS  
NURSERY IN SANTA BARBARA NATIONAL  
FOREST, CALIFORNIA



DIGGING AND BUNCHING YELLOW PINE FOR  
SHIPMENT AT THE NURSERY IN THE  
WASATCH NATIONAL FOREST, UTAH

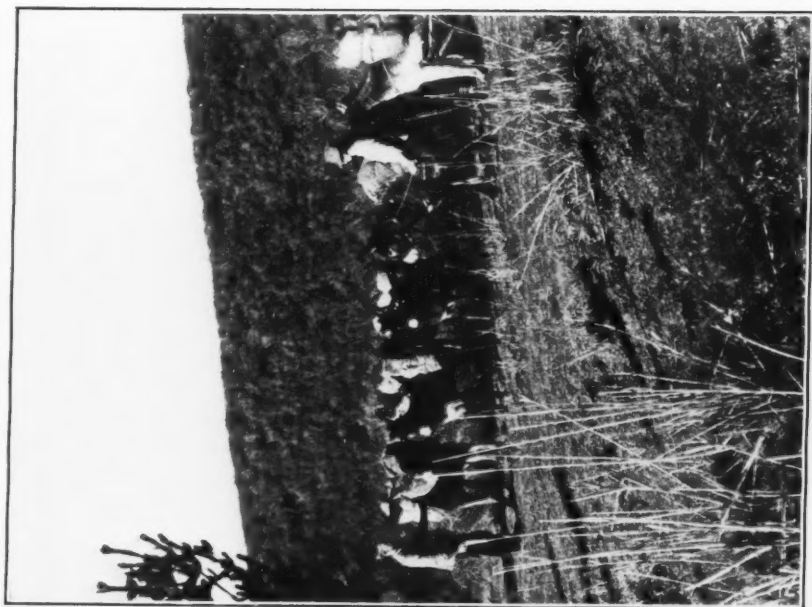




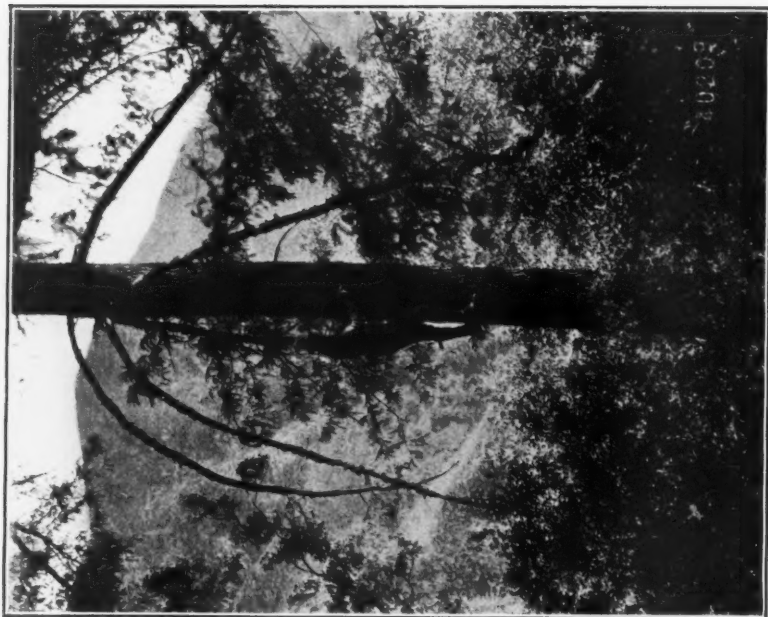
HEELING IN SEEDLINGS. LYTLE CREEK PLANTING STATION, NORTH FORK OF THE SAN GABRIEL, CALIFORNIA



BED OF RED CEDAR TRANSPLANTS PLANTED AT GARDEN CITY PLANTING STATION, KANSAS NATIONAL FOREST, KANSAS



METHOD OF PACKING OUT SEEDLINGS TO  
RANGERS FOR PLANTING IN NATIONAL FOR-  
ESTS, ANGELES NATIONAL FOREST, CALI-  
FORNIA



CLIMBING A TREE TO GATHER BIG CONE SPRUCE  
SEED, CALIFORNIA



SEEDING MEN SOWING CEDAR SEED BY THE  
SEED SPOT METHOD, SKAMANIA COUNTY,  
WASHINGTON



SEED SPOT SOWING OF SCOTCH PINE, NORWAY  
SPRUCE, AND EUROPEAN LARCH, ON A BURN OF  
1909, IN THE WENATCHEE NATIONAL FOREST,  
WASHINGTON



PLANTING GANG ON PLANTING SITE IN CHAPARRAL. SANTA BARBARA NATIONAL FOREST, CALIFORNIA



WHERE SEEDS HAVE BEEN SOWN BROADCAST. CUSTER PEAK EXPERIMENTAL STATION, LAWRENCE, SOUTH DAKOTA

# FOREST FIRES IN NORTH AMERICA

## A GERMAN VIEW

BY PROFESSOR DR. E. DECKERT, FRANKFORT.

TRANSLATED BY GEORGE WETMORE COLLES.

(This article is condensed from the essays of the author in Nos. 241 and 243 of *Frankfurter Zeitung*. It is valuable as showing the view of a trained German observer who has traveled extensively through our American forests. Naturally there are minor errors of fact, which it does not seem necessary to correct as it is the general viewpoint that is of value.—EDITOR.)

**D**EVASTATING conflagrations of an extent elsewhere unheard of have always been the order of the day in the United States. From time to time they have swept Boston, Chicago, Baltimore and San Francisco. Forest fires also have always occurred in the domain of the Union far more frequently and have been more devastating than in any of the countries of Europe, and in numerous cases have raged over many thousand acres, continuing for weeks and even months, until they have been brought to an end in one way or another. Human measures for confining and extinguishing them, such as ditches, earth-walls and back-fires have met with success only in rare cases; in the majority of fires it was rather the greater natural boundaries, such as broad streams and lakes, bare rock and sand-wastes, or heavy precipitation of snow and rain, which put an end to the fire. Burning limbs have been quite frequently borne over considerable obstacles, even over streams three hundred feet in width, so that the fire continued on the other side.

The damage which the natural resources of the United States have suffered from forest fires has long been known to be colossal, but to state it in exact figures, in a country in which lumbering, until the present, has almost always been carried on in the most extensive and wasteful manner, is extremely difficult, if not impossible. Moreover, the causes of the fires, the manner and reasons for their propagation and the possibility of effectually fighting them, have long been a matter of doubt and dispute, so that the most contradictory and absurd views on these points have obtained currency. In American lumbering circles the conviction began to grow in the eighties that the first cause of the evil was bad American customs and want of conscientiousness, and that the "ghost of the American forests" could be laid if a change in this respect were brought about.

The first effort to determine the number and extent of forest fires for the different sections of the country and hence the most necessary foundation for the proper diagnosis of the root of the evil was made by the well-known American economist, Francis A. Walker, who took advantage of the United States census figures of 1880. He found from the incomplete reports which he collected that in the year 1880 there had been 2,580 fires, and about

7,750,000 acres more or less had been burned over in the United States. In the number of fires, the principal states in their order of importance, were as follows:

Pennsylvania . . . . .	.381
Michigan . . . . .	.267
North Carolina . . . . .	.221
Ohio . . . . .	.192
Massachusetts . . . . .	.159
Wisconsin . . . . .	.108
Kentucky . . . . .	.106
New York . . . . .	.102

In the total area of forest burned over, the list is as follows in the order of importance:

Tennessee . . . . .	.985,000 acres
Missouri . . . . .	.785,000 acres
Georgia . . . . .	.705,000 acres
Pennsylvania . . . . .	.685,000 acres
Alabama . . . . .	.570,000 acres
Kentucky . . . . .	.557,500 acres
North Carolina . . . . .	.545,000 acres
Wisconsin . . . . .	.405,000 acres
Michigan . . . . .	.237,000 acres
New York . . . . .	.150,000 acres
Massachusetts . . . . .	.14,000 acres

The figures give no conclusion with regard to the extent of the individual fires and the value of the property destroyed, but it can be deduced from the above that the average extent of the fires was:

Massachusetts . . . . .	88 acres
Michigan . . . . .	890 acres
New York . . . . .	1,470 acres
Pennsylvania . . . . .	1,800 acres
Wisconsin . . . . .	3,750 acres
Alabama . . . . .	7,920 acres
Missouri . . . . .	8,090 acres
Georgia . . . . .	13,050 acres
Tennessee . . . . .	13,490 acres

From the above, it will be seen that there is a wide difference in the extent of the fires in the different states, and that there is a certain connection between this figure and the condition of culture of the state, showing that in the highly cultivated northern states, people have already learned better how to police the forests and keep fires under control than in the southern states, with their meager population and large negro element. The high figure for Missouri is to be accounted for by the climate, which is a notably drier one and more favorable for the spreading of fires than that of Massachusetts or New York. In general, it goes without saying that great confluence cannot be placed in the statistics of a single year, even if the reports were complete.

With respect to the causes of fires, an indisputable conclusion is drawn from Walker's investigation that sparks from locomotives are to blame in a great number of cases. Out of the 2,580 fires of the year 1880, no less than 505, or 19½, per cent are laid to this cause. The individual states give the following percentage:



New Jersey . . . . .	.52 per cent
New Hampshire. . . . .	.44 per cent
New York. . . . .	.42 per cent
Delaware. . . . .	.42 per cent
Pennsylvania. . . . .	.35 per cent
Massachusetts. . . . .	.33 per cent

so that in the most highly cultivated districts, and those having the thickest network of railways, the figures rise to a fearful height, which suffices to explain the above given high totals of the individual fires in these districts. In Tennessee, only 8 per cent of the total was due to locomotive sparks; in Alabama 6 per cent, in Georgia 4 per cent, and in Mississippi but 3 per cent, because the railway systems of these states are much less developed, so that in general, fires in those states must be ascribed to other causes. For the northern states the results of this investigation had a practical fruit, inasmuch as it led to the passing of laws to regulate the railways and to compel them to take steps to prevent damage or at least to confine it to the narrowest limits. These laws have been enforced with unquestionable success.

That the carelessness and conscienceless negligence of hunters, stockmen, lumbermen, prospectors, and tourists, who light fires for one purpose or another in the forests or around their borders, was the cause of a very much larger number of forest fires in every state of the Union without exception, has been sufficiently proved by the statistics of the year 1880. But in so broad an area of what is still largely a primeval wilderness, the root of the evil is much more difficult to get at. What is needed above all is a thorough-going organization of the forces and available means for forest protection, as well as a slow and long-continued campaign of education. In this direction the statistics in question have evidently borne fruit, especially since a later census of forest fires taken in 1891 by the Forestry Division of the Department of Agriculture, which gave similar conclusions to the previous ones of Walker. It is true these reports were still extremely incomplete, but then they related to a much larger area burned over in the year in which they were taken, namely, 12,000,000 acres. Besides, everyone who was familiar with the facts recognized that the figures of the years 1880 and 1891 were far below the maximum of damage to the national domain which the forest fires of a single year could reach, and that this maximum for the eighties and nineties amounted to about ten times the value of the annual useful consumption of wood.

What a contrast was this situation to that in European countries, where good forestry laws were in force! In the Prussian states, for the decade ending with 1891, there were in all 156 greater fires, four of which were caused by locomotives, three by lightning, 53 were of incendiary origin and 96 caused by negligence, and the total area devastated during the year 1884 and 1887 was 3100 acres. Bavaria, in the year 1892, with its unusually hot and dry summer, has a record of but 49 fires covering only 5000 acres. These figures in comparison to those of North America are absolutely negligible, and form a brilliant vindication of the forestry system of middle Europe, while at the same time they force us to the conclusion that in North America there are other factors to be considered besides those above mentioned, although these latter doubtless represent the principal causes of forest fires.

The movement for a better system of forest management and forest protection became a very strong one in all the states of the Union during the nineties and everywhere was productive of good results. In New York, Pennsylvania, Maine, Massachusetts, New Jersey, Minnesota, Michigan, Wisconsin, California, Oregon, and other states laws were passed for the protection of

forests and foresters appointed for their execution. In Biltmore, Ithaca, Cambridge and Ann Arbor schools of forestry were founded, state forest reserves were established (in Pennsylvania 600,000 acres), and in particular, special fire wardens, with a greater or smaller number of assistants, called rangers, were put in charge. But the most significant result of the movement was the resolution of the federal Congress, 1891, constituting a large part of the forested areas of the public lands still existing United States Forest Reserves, and subjecting them as such to the management of the central government. At first only 18,000,000 acres were set aside, but since then more than 150,000,000 acres have passed into the reserves, but of this amount, only 120,000,000 acres are actually forested, so that at present a full quarter of the total forest area of the United States belongs to either state or federal reservations. In these public forests, which embrace the largest part of the western mountainous districts, in more than 50 large tracts—almost the entire Sierra Nevada of California, the Cascade Mountains, the Mogollon Mountains of Arizona, great stretches of the principal mountain chains of Colorado, Big Horn Mountains, etc.—the natural conditions of the North American forest growth and hence also the principal causes and conditions of forest destruction by fire and other factors have been thoroughly studied out by experts in their special lines, and thereby with surprising rapidity ways and means have been found to combat the inception and spread of fires very effectively in most years.

In 1909 President Roosevelt, who had taken a great personal interest in the movement for forest conservation, was able to announce with well-justified satisfaction that during the preceding year only about one-tenth per cent of the entire area of the forest reserves had been visited by fire; while in 1906 the area visited was about one-sixth per cent, and in 1907 about one-seventh per cent. This was indeed a brilliant success for the new forestry system, and it must be conceded that the officials concerned, both of the Land Office and Department of Agriculture, did their full duty. In 1899 there were nine superintendents, 39 supervisors and 300 rangers, and with the growth of the forest reserve area several thousand were subsequently added. In the years 1896, 1897, 1898 and 1900 some still very destructive fires had raged in these areas and the proportion devastated annually had amounted to 8 to 15 per cent, but careful investigations in the reservations established the fact that in earlier years far greater portions of them had been frequently burned over. In the Black Hills reservation of South Dakota, the Big Horn reservation of Wyoming and the Priest River reservation of Idaho, the forest floor showed everywhere more or less fresh traces of fire. In the Cascade mountains, out of 3,000,000 acres only 25,000 (eight-tenths per cent) showed no traces of previous fires; in the northern Sierra Nevada out of 2,950,000 acres, only 77,000; in the Pike's Peak and Bitter Root reservations, only about twenty per cent. Even in the forests of the east, which for the most part had remained in the control of private persons or local governmental bodies, the new era brought with it a decided change for the better, notwithstanding the fact that in Minnesota, Wisconsin and Michigan, during 1889 and 1894, a succession of immense fires took place. The years 1908 and 1909 brought no essential alteration in the favorable condition of things in the west, while on the other hand in New England and in Minnesota, Wisconsin, and Michigan, there were during 1908 a number of the most frightful and devastating conflagrations; and now this year 1910 has brought to the west in its turn, and especially to the states of Montana, Idaho, Washington, Oregon and California, a baptism of fire, which is absolutely without parallel in the history of these states. In such a case as this, the police system of United States fire wardens and rangers, and in

fact the brand new system of the United States forest reserves, completely broke down just as the incomplete organization of the eastern states had done in 1908, and a large number of the brave fire-fighters met their death in their zealous efforts to extinguish the flames.

How such a catastrophe could take place after the great progress of the previous decade is a question easily answered both on general geographic considerations and also with the assistance of the information provided by the numerous handsome volumes of the United States Geological Survey relating to the different reservations. In the first place, it is to be observed that in the United States, and especially in the west, it is unfortunately impossible to combat the original causes of forest fires in as effective a way as is done in Germany. The rough men who find their living in the eastern or western wildernesses, in mining, hunting, stock-raising or other interests, can not be prevented from building camp-fires, which are positively necessary for protection against the cold of night as well as for cooking, nor on the other hand can they be forbidden the enjoyment of their only pleasure, tobacco; and to find a spot absolutely free from danger for camp-fires is, in such circumstances, simply an impossibility. On this point, the author of these remarks, who knows the wild west and its inhabitants quite well from his own experience, must confess that even he, when on his journeys of investigation, has frequently built his camp-fire under press of circumstances in places which he knew in advance to be dangerous, and in several cases narrowly escaped the responsibility of thousands of others for negligent fire-setting. In one case it was only with the greatest difficulty that he and his party succeeded in extinguishing a blaze which unexpectedly leaped its bounds and which would have utterly destroyed an extensive forest area of Arizona. Camp-fires in the woods which are carelessly watched or are abandoned without being extinguished must necessarily escape in large part the notice of the forest guards on account of the enormous extent of the areas under their jurisdiction and the fact that wide stretches are unprovided with roads or trails. Even those fires which are negligently caused by locomotive sparks can not be prevented in North America in the same degree as in Europe, simply because much greater lengths of track are concerned and because the lay of the land in many cases does not permit the laying out of fire-lanes. With the experience of the last decade, however, it can no longer be doubted that with a well-organized patrol, fires of this sort can generally be extinguished before they reach a too great extension. In a similar manner it may be possible to effectively combat a large proportion of intentional fires. It was formerly common for both Indians and white hunters to thoughtlessly set underbrush ablaze merely to scare up game, and many of such fires were propagated indefinitely. Such vandalism is at the present time limited in most places, and in so far as it yet exists, there is a good prospect that its days are numbered. But far more numerous have been those fires which have been started for clearing purposes or for burning brush and rubbish. Particularly in the northwest, in Oregon and Washington, where the growth of the giant trees in many places is so great that it seems impossible to dispose of them with axe and saw alone, it is quite general to resort to fire and dynamite to accomplish the clearing. In the east, too, it has been the rule to get new land for cotton or grain plantations by burning off extensive wooded areas, and the farmers care little for the charred trunks which are left standing. Not a few of the fires so produced have continued far beyond the limits set for them, and this has been one of the most frequent causes of very great forest fires in the newly settled districts. Of course the new forest guards of the United States have given special attention to this cause, and by insisting

upon proper preventive measures in clearing lands they have succeeded in preventing serious damage in most cases.

More difficult to handle have proved cases of malicious incendiarism. It is a matter of experience that evil doers in North America can much more easily escape the eye of the law than in European countries, simply because of the greater area and more numerous hiding places, and the lynch-law system as commonly practised can hardly improve the matter, as in such cases an innocent party is taken and punished for the guilty even more frequently than in the case of other crimes. Fortunately the number of malicious fires in the United States has probably never been great. But besides these human fire-setters, there is a natural one which assumes importance in the least accessible districts, namely, lightning. In the North American west fires are started by lightning with uncommon frequency, and as many storms there yield hardly any rain, the flames which follow it are not as a rule extinguished as in the east. From his investigations in the San Francisco mountains of Arizona, J. B. Leiberg, the most distinguished expert of the United States Geological Survey, came to the conclusion that in this reservation by far the greatest number (about sixty per cent) of all fires are caused by lightning.

And this brings us to another principal factor which must be considered responsible for the rise and spread of forest fires in North America—the climate. It has long been known not only that the North American climate is much drier than the European, but that in the west the drought is long-continuing, even to the point of complete rainlessness, while in the east, in spite of the large annual rainfall, there are periods of drought of greater or less length. What effects are produced by such a climate on the forest and its inflammability can be readily understood. In Germany, double precautions are taken in dry years, and in spite of this the fire damage increases in such years; in North America, the highest possible degree of care is demanded every year, and in dry years the greatest conceivable care is insufficient to prevent the spread of individual fires over immense areas. Such a year in the east was 1908 with its gigantic conflagrations, in the west 1910; so that we are not to presuppose for such years an unusual number of malicious or negligent persons, for natural conditions are without doubt principally responsible in these special cases. The forest-floor of the western woods with its dry pine-needles, twigs, moss, grass and general undergrowth and its millions of dead trunks thrown down by storms forms in late summer and autumn a tinder which can be set off by any small spark; but in the present year, in which the summer drought set in in the middle northwest unusually early and was extremely severe, it was still drier than usual, and fires had passed human power to control before their existence was known.

Since the woods of the west consist principally of conifers, whose large content of rosin makes them much more inflammable than other trees, it is to be presumed that the destruction was very complete. Certain species, however, more particularly the yellow pine, offer a great resistance to forest fires, and where they stand unmixed and without any great undergrowth they frequently escape being killed. For this reason even in the driest parts of the west, such as Utah, Nevada, Arizona and New Mexico, where there are many pure stands of yellow pine, the destruction by fire is seldom so radical as in the less dry areas of Idaho, Montana, Washington and Oregon, in which the stands are usually mixed and in addition present a ground covering which is very combustible after it has been exposed to the summer drought; besides, the numerous standing dead trees, and areas of dead trees, which have been killed off by insects or other conditions, are highly favorable to the spread of fires in the forests of the northwest.

Naturally, before the nature of these latest fires can be determined in all their details we must wait for a more exact determination of the facts. The area covered by them must have reached well over 250,000 acres, and that the forest reservations in spite of their good patrol service have suffered extremely heavily is already established. But hardly anyone would advocate the restriction of the forest service on this account. Rather after this new disaster, will measures be taken in the future to place twice or three times the number of rangers on guard over the dangerous districts in years in which summer drought sets in early and is particularly severe.

In the eastern half of the union climatic conditions are quite different from those in the western half, both as regards the character of the trees and also that of the fires, and taking it all in all, it is much easier to maintain an effective fire guard there. Only once in many years is there a complete drying out of the forest-floor like that of Idaho or Colorado, and natural fire lanes are provided by broad rivers and numerous lakes and marshes, and moreover the land is rendered much more accessible by roads and trails than in the mountainous districts of the west. Nevertheless whenever a fire breaks out in the vast white and black pine woods of Maine, Michigan, Wisconsin and Minnesota, the danger of its spreading over a wide area is still very great, and especially in dry years the guards have a much more difficult task to extinguish fires than in Europe. Even in those districts the forest-floor is drier on the average in late summer than it is in Europe, and the woods are clogged with fallen and standing dead trunks.

Similar conditions exist in the turpentine woods of the great coast plain which extends from New Jersey to Texas. In these woods the great pitch content of the trees increases the danger, while the presence of broad stretches of marsh along all of the streams diminishes it.

In the mountain forests of the southern Appalachians, in which oak, hickory and other foliage trees predominate, fires are still frequent, yet on account of the greenness of the fuel they seldom do the same damage as in other parts of the country. Ayres and Ashe have established the fact that in the Appalachian area four and one-half million acres, about 80 per cent of the total, have been damaged by earlier or later brush-fires, but only 78,000 acres totally destroyed. In the mountain woods of the northern Appalachians, where conifers predominate, fires are generally of a more devastating character, and even in the Adirondack state reservation of New York as many as 467,500 acres suffered heavy damage from fire in 1904.

Relatively small was the fire-destruction in the northwestern coast forests, according to the investigations of the United States forest service, that of the Olympian peninsula amounting to only 112,500 acres, consisting wholly of conifer stands in the north and northeast portions. The interior of this wilderness has not yet been penetrated by white settlers. In the Canadian west, where already numerous miners, hunters, and lumbermen pursue their calling, conditions were the same as in the neighboring portions of the United States, and the fires of the current year in British Columbia have reached the same degree of destructiveness, and for similar reasons.



## PURPLE BASKET WILLOW

By C. D. MELL

### INTRODUCTION

**A**N EFFORT has been made in this paper to compile information dealing with the commercial value of the purple willow (*Salix purpurea* L.) and its most important varieties and hybrids commonly planted for the production of rods used in making furniture and basket ware. The success of a basket willow plantation depends upon the kinds planted as well as upon the system of management. The purple willow is more generally cultivated in this country than any other variety and yields material that is highly esteemed by the consumers of willow rods. In northern New York, Michigan, Wisconsin, and Minnesota it forms more than 90 per cent of the willows grown. A number of experiments with the purple willow were made by the Forest Service, United States Department of Agriculture, for the purpose of determining the most suitable system of management. Numerous private holtz throughout the eastern Central States were also investigated with a view to determine the varieties grown and to ascertain their soil and climatic requirements. The suggestions offered in this paper are therefore based partly upon the practical results of several years' tests in the experimental holtz at Arlington, Virginia, and partly upon suggestions furnished by experienced growers in this country and abroad.

A great many common names have been given to this willow, and therefore it was considered advisable to select a name which should be given preference in future references. Although French osier is most commonly used by a large number of growers of basket willows, especially in New York State, it has been decided that a translation of the botanical name is more descriptive and appropriate. In order that the reader may determine what willow is referred to under the term purple willow, the following vernacular names are added which are often used by growers to designate this species: stone willow, common stone willow, Welsh willow, crab willow, osier, red osier, French osier, green-leaf osier, French willow, purple willow, common purple willow, bitter purple willow, and common basket willow.

### BOTANICAL CHARACTERS

Purple willow has very distinct characters by which it may be readily recognized. The leaf blades are oblong to lanceolate or sometimes apiculate and broadest above the middle where they are more or less distinctly serrate; below the middle they are always entire. On the upper surface they are very smooth, of a rich shining purple and somewhat glaucous; on the under surface they are light-bluish green and often show a yellowish midvein. They are from two to four inches long and from one-fourth to three-fourths inch wide, and are sometimes arranged opposite on the slender, smooth and somewhat reddish (when young) shoot. The leaves of nearly all varieties of this group of willows turn black in drying. The petioles are very short and without glands. The stipules vary from linear to semi-linear, toothed, and



are very deciduous. The mature shoots have a smooth, yellowish gray bark and possess a number of appressed, obtuse, and generally glossy and occasionally red buds. The inner bark of the young twigs, especially during fall and winter, is orange yellow but toward the top becomes red. In poor soil and particularly in sandy soil the shoots have a yellowish color.

The catkins appear earlier than the leaves and are sessile, cylindrical and densely flowered. The male catkins at first appear purplish red, but during pollination become golden yellow, and after blooming brownish black. They are from half to two inches in length and about half inch in diameter. The bracts at the base of the catkins are small and leaflike. The small, round, concave scales are black in the upper half of the catkins and covered with hair; at the base they are red. The male flowers have a single stamen which is drooping and is formed by the union of the two filaments and anthers. The female catkins are purplish red; the fruit pods are densely tomentose and contain a single upright ovule. The empty cells of the brownish capsule recurve very strongly.

Willows are subject to considerable variation. The size, shape and surface of the leaves, their serratures, and the general characters and qualities of the rods vary greatly, depending upon soil and climatic conditions. The purple willow may be considered as a mean around which all its varieties are grouped. The constancy of these varieties is dependent upon the conditions which originally brought about the variations; when external conditions change, either those of soil fertility or soil moisture, changes in the character of the plant again take place, and the variety either reverts toward the mean, or, in its struggle to adjust itself to new conditions, gives rise to characters still more remote from the original form.

Hybrids are raised from different species and are generally considered not susceptible of propagation by seed. The terms hybrid, blend and bastard are limited to forms produced by cross fertilization. Some of the most important basket willows have been obtained in this way.

#### VARIETIES OF THE PURPLE WILLOW

The purple willow occurs in a great number of varieties which are more or less useful. The better ones yield the bulk of the rods used in the manufacture of wicker ware. They produce very thin, flexible, slender, cylindrical, and branchless rods. In Germany the twigs used for binding the vines are produced by varieties of this species. In selecting varieties for planting the kind of material furnished by them must be kept in view, since different varieties often differ very greatly. A number of them are good and persistent producers while others do not yield a full crop until the fourth year and diminish again after a few years.

The following varieties are recognized as the most important ones in this group:

*Salix helix* Smith (not L.). Rose willow; longleaf purple willow; green stone willow. Noethlichs, a German authority, gives a very favorable report concerning this variety and claims that there are two sub-varieties of this which are underscribed. The one has greenish-gray bark turning dark-green during the winter, while the other has pale rose-colored bark near the top of the shoots which are exceedingly slender, and its wood is heavier than of any other variety. The bark is rich in salicin and in Europe is also used for the production of tannin and coloring matter. This willow does not require a very rich soil and yet produces numerous long and slender rods.

*Salix lambertiana* Smith. Lambert's willow. This is a large-leaved variety with very beautiful catkins. It is the tallest among the purple willows

but is not praised very highly by growers in Europe. According to Pursh, it was introduced into this country very early for the production of basket willow rods. Owing to the graceful character of its slender shoots and glaucous foliage it is often planted for ornamental purposes.

*Salix bractea rubra* Koch. Red willow. The red brick colored scales of the catkins of this variety at once distinguishes it from the common purple willow that has black scales. It produces very long, straight and cylindrical rods, and in England is esteemed very highly. It grows in almost any soil, but in rich moist soil it yields an exceedingly heavy crop. It is used in certain parts of Europe for game coverts and fences. The rods are used for making willow ware requiring strength and durability.

*Salix purpurea emendata* Hort.\* Noble willow. This variety is also easily recognized from the common purple willow by its thrifty growth and slender rods. It is planted extensively in Germany and the rods are used for all purposes in the manufacture of willow ware.

*Salix purpurea kerkzii* Hort.\* English willow. The twisted leaves of this willow furnish a character that makes it easy to be distinguished from other varieties. Although this kind is equally as valuable as the noble willow, it is more often used for fences and hedges than for the production of basket rods. It produces numerous slender and branchless shoots after the second year.

*Salix uralensis* Hort.\* Ural willow. This is a native of Galicia and is considered equally as good as the English willow and produces in dry soil, or in cold situations, a large number of very tough and slender rods. The first year after planting the shoots spread out considerably, but during the second year and thereafter they grow straight up to the height of 10 feet. The rods are almost perfectly cylindrical and for this reason this variety is often called cord or string willow. It has been grown in this country with very good success.

*Salix uralensis serotina* Hort.\* Black Ural willow. In Europe this variety is often referred to as the late Ural willow, since it matures later and has smaller shoots than the Ural willow. It thrives in poor soils and unfavorable situations, but in this country it has been planted with only indifferent success.

*Salix purpurea glauca* Hort.\* Blue green stone willow. In moderately fertile sandy soil this variety produces very thin and long rods which are in great demand among manufacturers of fine basket ware. It matures later in the fall than any of the other varieties and on this account is sometimes injured by frosts.

*Salix purpurea gracilis* Wimmer. Fine purple willow. This willow produces rods that are considered among the best in Europe, but the shoots frequently branch. It has been tested on a small scale in this country and found to make excellent growth with no side branches.

*Salix purpurea pyramidalis* Hort.\*\* Pyramidal willow. In France where the pyramid willow is most widely cultivated it is known as Belle Josephina (*Salix purpurea josephina*). It is an excellent willow for hedges as well as for basket willow rods. It has been cultivated in Germany for more than sixty years.

*Salix purpurea elata* Hort.\* High stone willow. This willow is known to have yielded a very good crop the first year after planting. It occasionally

\*Horticultural varieties.

\*\*J. A. Krahe, in his "Lehrbuch," page 104, states that this variety must be regarded as *Salix helix* Smith, but without first seeing both male and female flowers this can not be definitely determined.

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produces shoots 6 feet long the first season; in height growth it approaches the Ural willow.

*Salix purpurea sericea* Wimmer. Silken-haired willow. In Germany the silken-haired variety is considered one of the most valuable and profitable basket willows. Its leaves while young are covered with a dense silky down which disappears at maturity.

Among other varieties\* of the purple willow the following may be mentioned:

- Salix wisconsinensis* Cat.
- “ *malensis*
- “ *purpurea atropurpurea*
- “ “ *angustifolia*
- “ “ *macrophylla*
- “ “ *lutescens*
- “ “ *utilissima*
- “ “ *mirabilis*
- “ “ *graminea*
- “ “ *procumbens*

*Hybrids of the Purple Willow*

*Salix viminalis* x *purpurea* Wimmer. Common hybrid. This is the most important hybrid resulting from the cross fertilization of the white willow (*Salix viminalis* L.) and the purple willow. It belongs indisputably to the basket willows of the highest rank. The common hybrid possesses more characters of the viminalis group of willows than of the purpurea group. The rods are very long and more nearly uniform in length, though thinner than the white willow, but just as slender, smooth and flexible as the purple willow. Furthermore the bark is thin and peels easily. The wood is very tough and remains white for a long time after peeling. The rods split easily and can be planed without difficulty. The holt retains the vitality of the purple willow and is extensively planted in Europe.

*Salix rubra* Hudson. Rose willow. Another hybrid of the purple and white willows is recognized by its yellow anthers which are long and narrow and somewhat tapering at both ends; also by the leaves which are remotely serrated. If the leaves are green below and either smooth or with a few scattered hairs the hybrid is *Salix rubra* Hudson (*Salix helix* L.) including *Salix angustissima* Wimmer. A form with the under surface of the leaves more strongly pubescent or silken pubescent is segregated as *Salix elaeagnifolia* Tausch.

*Salix forbyana* Smith. Forby's hybrid. An important cross between the white and purple willows that has more characters of the purple willow is Forby's hybrid. This hybrid differs from the purple willow in having more or less adhering filaments in the male flowers and the under surface of the leaves slightly pubescent. It differs from the white willow by its slender pistil, distinct leaf scars and the development of minute stipules. That it approaches the purple willow more closely is shown by its red anthers when young, and by the leaves which are broadest above the middle and the serratures on the upper half. They are blue-green and slightly pubescent below when young. This willow yields very strong and tough rods and is planted extensively in England for the production of posts, poles, stakes, and handles for implements.

\*These varieties are mentioned in a number of German publications dealing with basket willow culture, but no reference could be found regarding their authors. It is likely that the majority of these have never been described and with suitable material a few could perhaps be shown to be identical with some of those cited above.

On account of its rapid growth it is also planted in Germany for rods to be used in wicker work.

*Salix rubra populifera*.\* Langenauer blend willow. This hybrid originated at Langenau, near Mainz, in Germany, and is similar to the one mentioned above, except that it makes a more vigorous growth.

*Salix rubra sessifolia*.\* Sessile-leaved blend willow. This willow originated in France and in rich soil yields a very large crop of rods. It is easily distinguished by its sessile leaves and by its reddish tinge of the young shoots.

*Salix rubra viridis* Greene. Red blend willow. This hybrid is cultivated extensively in the upper Rhine region, where it gives extraordinary good results and is highly esteemed as a basket willow of the first rank.

*Salix pontederana* Koch.\*\* Pontedera's willow. This is the same as *Salix cinerea* x *purpurea* of Wimmer and is regarded as one of the most beautiful and robust basket willows known. Like that of *Salix purpurea gracilis* Wimmer, it develops numerous side branches which render this hybrid almost valueless.

*Salix calliantha* And. Beautiful flowered blend willow. Kerner described this willow as *Salix purpurea* x *daphnoides*. It is a very desirable basket willow and produces very long branchless rods. The catkins are very large and beautiful and the shoots are among the first of the basket willows to start growth in the spring.

*Salix mauternensis* Kerner. Mautern's blend willow. This hybrid corresponds exactly with Kerner's description of the characters of *Salix caprea* x *purpurea* Wimmer, and the horticultural variety *Salix discolor*. It is very productive and yields middling strong, branchless rods. In western Germany it is highly esteemed as a basket willow.

*Salix doniana* Smith. Don's blend willow. This willow was also described by Wimmer under the name *Salix repens* x *purpurea*. It is suitable for planting in dry soil but does not yield a large crop of rods.

*Salix dichroa* Doll. Double-colored blend willow. Doll's hybrid is also known under the name *Salix aurita* x *purpurea glaucescens* Wimmer. It is a hybrid that is considered a botanical wonder, and is more often planted for hedges and ornamental purposes than it is for basket willow rods.

#### ORIGIN, DISTRIBUTION, AND REQUIREMENTS

The purple willow is distributed through southern and middle Europe and extends northward into Sweden and eastward to Moscow. It also inhabits central Asia, but it occurs most abundantly along the Danube and in the valleys of the Alps. In the Bavarian Alps it grows at an elevation of 2,200 feet, and in the Tyrolean Alps at 4,800 feet above sea level. It occurs most abundantly along rivers and in moist places generally. On mountains over 4,000 feet elevation it seldom attains a height of more than 8 or 10 feet. At lower elevations it develops into a tree.

It was first introduced into this country by German emigrants, and is now the principal basket willow cultivated on a commercial scale. It is distributed throughout the entire region in which basket willows are now grown.

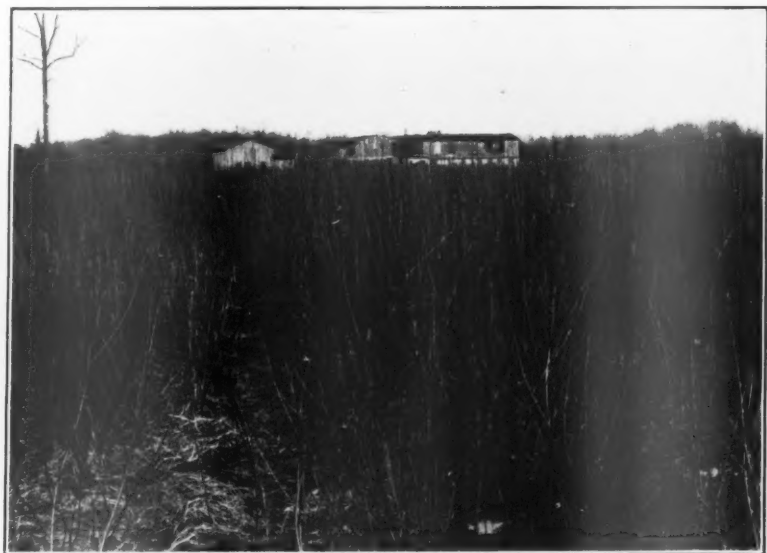
The purple willow is capable of enduring greater diversity of temperature than any other basket willow. Its natural range, as above stated, extends from Sweden south to Algeria and east into Asia. It is extensively cultivated in

\*The authorities of these botanical names can not be determined except by further research.

\*\*This species must not be confused with Willdenow's species of this same name belonging to the *Viminales* group.



PURPLE WILLOW ONE YEAR OLD AT  
FREDERICK, MARYLAND



PURPLE WILLOW ONE YEAR OLD  
AT LAUREL, MARYLAND



PURPLE WILLOW NEAR COLOGNE, GERMANY



HYBRID WILLOW THREE YEARS  
OLD, GERMANY



this country, where it has escaped and become widely and thoroughly naturalized. No detailed systematic census of its artificial range in the United States has been made, but it has thoroughly adapted itself to the varying climatic conditions from Maine to Nebraska and from Minnesota to Kentucky, Tennessee and Georgia. Doubtless, it will be possible to increase the area of its distribution considerably. The purple willow is perfectly hardy, and in locations where other varieties of basket willows have been injured by frost this one remained totally unharmed.

The purple willow demands more sunlight for its best development than any other basket willow. Its small, narrow leaves and its habit from spreading out from the stools in order to form an open stand show that it requires considerable air and light. It is least sensitive to shade in moist fertile soil, and becomes more shade-enduring as the stools increase with age. In dry soil it makes a rapid growth, provided, it receives sufficient air and sunlight. In plantations where the American green and the purple willow are planted alternately in rows 18 inches apart, the latter develops comparatively few shoots which grow up straight and rise above the dense and broad-leaved American green willow in quest of air and sunlight and the lower leaves drop off early in the season for want of sufficient light. Mixed planting in close ranks prevents the development of branches and stimulates height growth. The shoots grow up straight and remain thin and cylindrical.

The purple willow should be planted on southern exposures where it may receive the benefit of the hot rays of the sun, for it grows most rapidly during hot, dry weather with bright sunshine. Even in a dry soil it has made a height growth of 2 to 3 inches during a sunny day; in rainy weather for the same length of time the growth did not exceed one-half inch.

The soil best adapted for growing the purple willow is deep, fresh sandy loam; a soil yielding good crops of Indian corn also yields a profitable crop if willow is properly managed. It also thrives in well-drained, mucky soil if weeds are kept out. A few growers in parts of Massachusetts and New York claim that it can be grown with good profit on sandy upland. It has been grown for forty-three years on upland and the annual yield showed no decrease during all that time. It requires less soil moisture than most other basket willows. Although a deep sandy loam is best suited to the purple willow, a moist, sandy, clay soil oftentimes produces a very rapid growth, if the subsoil is loose and moist. The persistent efforts of many growers to propagate it on wet land have yielded results showing that it does not require wet soil. In upland it develops a great mass of rootlets to take up the available moisture. In well-drained locations the soil can be cultivated frequently and thus kept loose and aeriated. It is said that rods grown in wet loam are tougher and more flexible than those grown on rich, fertile uplands, but this has not been fully substantiated.



## THE APPALACHIAN FORESTS

### *Putting the New Law Into Operation*

THE new national forest law calls into action several official agencies, but the initiative in the purchase of land as well as the consummation of such purchase when authorized rests with the Department of Agriculture which, of course, acts through the Forest Service. The Service has made very complete arrangements for an efficient carrying out of the full intent of the law. Assistant Forester William L. Hall, who conducted the investigation in the Southern Appalachian and White Mountains under the \$25,000 appropriation in 1907, and is therefore well fitted for the task by personal knowledge of the conditions in both sections, has been recalled from Madison, Wisconsin, where he has been in charge of the branch of forest products since the opening of the new laboratory last year and has been put in charge of the work of establishing the new national forests. McGarvey Cline, who was Mr. Hall's second in command at Madison, has been put in charge of the branch of forest products with headquarters at that place.

Mr. Hall has already established his office in Washington and is at work on the great and responsible task in which so many people in so many states are interested. For reasons which were mentioned in *AMERICAN FORESTRY* last month the White Mountain situation is being especially studied, but the southern mountains are also being districted and undergoing preliminary examinations and offers of land are being received and considered from several of the states which have passed the necessary enabling act.

In this matter of offers of land, the need of public spirit on the part of land owners cannot be too strongly emphasized. Here is an enterprise which has been urged for the public good. The unselfishness of its advocates has been repeatedly and sincerely affirmed. Now comes the actual test of citizenship. Will those who hold the lands recognize the public necessity, as Congress has somewhat reluctantly done, and meet the government half-way? Or will they hold their property for impossible prices and thereby delay and obstruct the development of this great enterprise?

The correspondence received thus far, while considerable, is not sufficient to answer these questions. When the circular explaining the plans and methods of the government has been thoroughly distributed fuller indications will doubtless appear. Thus far there have been several moderate offers made from both north and south, and some impossible ones. One proposal was to sell the government a tract, not of the highest timber value, for seventy-five dollars an acre, which was about eight or ten times other offers that represented quite as great a value. Owners who hold at such figures may as well save their paper and postage. Such offers cannot be considered.

It has been hoped that some owners of means might make gifts of land to the government, as Mr. Harriman did to the state of New York. This is

a good cause, a great public cause that will hand down large benefits to posterity and tend to preserve the prosperity of our civilization. It is certainly a good object for public-spirited givers. It is a cause that is sufficiently in the public eye to satisfy those who like to have their giving known of men, and it has the enduring quality of a monument. Forest lands, given to the nation to preserve and maintain, will stand for all time as reminders of the good will of the giver to his country and to those who come after him.

Admitting, however, that those who may be able to be thus generous are few, the attitude of those who sell the land to the government, as they compose a far more numerous class, is much more important. If they meet the officials half-way with good offers at fair or low prices, it will assist greatly in the early and successful establishment of the forests. The appropriation will not be sufficient to purchase half of the land that is needed for the purpose of the act. Let us urge owners, then, not to try to speculate in the needs of the people, but to help make this money go as far as possible. It is not a gift from some invisible source that is going into the purchase of these lands. It is our money that is being spent and it is for the interest of the seller of the lands as it is of everyone else that it be used to the best advantage. To make this new policy a success, the same full and interested cooperation that secured the enactment of the law is necessary. No close-fisted policy, or attempt to make money out of the government, or unload useless property at high prices, will pay in the long run. In most cases cut-over lands stand the lumber companies practically nothing. They bought the stumpage, and having secured it they have no further interest in the land. Such tracts the government should be able to obtain at a nominal figure, leaving larger amounts to put into protective forests where the standing timber must be purchased and largely retained.

No hard and fast policy in regard to purchase can be laid down in advance. For the beginning at least each case must be considered on its individual merits. Perhaps when the nuclei of the necessary forests have been developed, the policy of rounding out and completing may appear more clearly.

Mr. Hall believes that there are great possibilities in that section of the bill which provides for national and state cooperation for fire protection. Under the terms of this provision the government may expend for fire protection an amount, not exceeding the amount appropriated by the state for the same purpose, in any state which has provided by law for a system of forest fire protection. Three or four states, notably New Hampshire and Vermont, are already planning to come in under this provision and the organization of the forest service in these states is such as to entitle them to the benefit of its provisions. Mr. Hall confidently believes that the passage of this law will lead to the suppression of forest fires in the eastern United States within a few years.

Last month a summary was published of the announcement of the Forest Service with reference to the purchase of land under the Weeks law in the Southern Appalachian and White Mountains. This announcement has been printed as a circular for general distribution and copies can be had by application to the United States Forest Service. The circulars are accompanied by blank forms for submitting proposals of land and include the text of the Weeks law. The circular, issued under date of March 27, 1911, will be of interest to readers of this magazine and is reproduced here:

**PURCHASE OF LAND UNDER THE WEEKS LAW IN THE SOUTHERN APPALACHIAN AND WHITE MOUNTAINS****GENERAL INFORMATION**

The act of Congress approved March 1, 1911 (Public, No. 435), created a National Forest Reservation Commission and authorizes the acquisition of lands on the watersheds of navigable streams for the purpose of conserving their navigability. The Secretary of Agriculture is authorized and directed to examine, locate, and recommend to the Commission for purchase such lands as in his judgment may be necessary to the regulation of the flow of navigable streams, and he is authorized to purchase, in the name of the United States, such lands as have been approved for purchase by the National Forest Reservation Commission at the price or prices fixed by said Commission. The full text of the law is to be found on page 7.

The general purpose of this law is to secure the maintenance of a perpetual growth of forest on the watersheds of navigable streams where such growth will materially aid in preventing floods, in improving low waters, in preventing erosion of steep slopes and the silting up of the river channels, and thereby improve the flow of water for navigation.

While the improvement of the flow of navigable streams is the fundamental purpose, other benefits incidental in character but nevertheless important will be kept in view. Among these are (1) protection against disastrous erosion of the soil on mountain slopes and against the destruction of the soil and soil cover by forest fires; (2) preservation of water powers, since, like navigation, they depend for their value upon the evenness of streamflow; (3) preservation of the purity and regularity of flow of the mountain streams, with a view to their use for the water supply of towns and cities; (4) preservation of a timber supply to meet the needs of the industries of the country; (5) preservation of the beauty and attractiveness of the uplands for the recreation and pleasure of the people.

Aside from its application to the watersheds of navigable streams, the law is not restricted to particular regions, except that lands may be purchased only in the States whose legislatures have consented to the acquisition of such land by the United States for the purpose of preserving the navigability of navigable streams. The States which have passed such legislation and in which purchases are now contemplated are: Maine, New Hampshire, Maryland, Virginia, West Virginia, North Carolina, Tennessee, South Carolina, and Georgia.

The sources of the navigable streams which have their origin in the Rocky Mountains or the mountains nearer the Pacific coast are already to a large extent protected by national forests. The Appalachian Mountains, including the White Mountains, are for the most part without such protection. Because of their altitude, steepness, and lack of protection they are in a class by themselves in their need for the action authorized under this law.

The first lands to be examined for purchase will therefore be in this region. The area needing protection in the Appalachians is very large. It is far larger than can be purchased with the funds appropriated under this law. Much difference exists, however, in the character of the lands in different parts of the region. Mountains are higher, slopes steeper, rainfall heavier, and the soil more easily washed in some sections than in others.

Careful examinations made during the past 10 years in practically all parts of the Appalachian region have proven that the conditions which affect streamflow to an extreme extent are to be found in relatively limited areas. These areas are scattered more or less widely. By careful selection of the tracts it will be possible to do much for the permanent improvement of the watersheds by the purchase of only a part of the mountainous region.

Within these areas not all, and in some cases not a very large proportion, of the land will be needed by the Government for the purpose in view. Just what lands should be purchased will be determined in every case as a result of a careful examination.

Some of the important areas are already known, and the purpose of this circular is to invite proposals for the sale of lands within them. A list of such areas is to be found on page 4, and a blank form and an official envelope to be used in making proposal for sale accompany this circular. Additional copies of the blank may be had upon application to the Forester, Forest Service, Washington, D. C. The blank should be accurately and fully filled out and mailed, securely sealed in the envelope. If possible, a map showing the boundaries of the tract should be submitted with the proposal for sale. If the proposal is satisfactory, the Secretary of Agriculture will expect the owner to execute to him an option on the land for a reasonable length of time.

Lands of the following classes will be considered for purchase when they lie within a designated area: (1) Timbered lands, including both land and timber; or the land, with the timber reserved to the owner under rules of cutting to be agreed upon at a

time of sale; (2) cut-over or culled lands; (3) brush or burned land not bearing merchantable timber in quantity, but covered with a growth of brush which is useful for watershed protection, and burned land whether covered with young timber growth or not; (4) abandoned farm land, whether remaining cleared or partially covered by timber growth. Good agricultural lands will not be considered.

Where valuable mineral deposits are known to exist, the right to remove such deposits may be reserved to the owner, under conditions to be agreed upon, such conditions to be incorporated in the written instrument of conveyance.

Lands lying within the designated areas can not be recommended for purchase unless examination by the United States Geological Survey shows that their control will promote or protect the navigation of streams on whose watersheds they lie.

Lands proposed at exorbitant prices will not be considered. The holding of land at too high a price in any of the areas will prevent the Government from undertaking purchases within it.

No limitation is put upon the size of tracts to be proposed for sale. Proposals will be received for small as well as for large tracts within the areas designated, but small tracts can only be examined when they lie adjacent to or near large tracts which are being examined or where the aggregate of all tracts offered for sale is sufficient to justify an examination.

The right of any landowner to deal through an agent is, of course, recognized. The placing of lands in agents' hands, however, is unnecessary, as the owners themselves may deal direct with the Government.

The lands purchased by the Government under this law are to be included in national forests. Such forests will in no way interfere with hunting and fishing within the areas. The laws of the States in which the forests are located will apply as at present and the forests will be open to anyone and everyone. The use of the forests for all reasonable purposes, including recreation, will be encouraged.

In general the procedure in making purchases will be as follows:

(1) The filing of proposal for sale of land by the owner or owners.

(2) Examination of lands. This examination will usually include a careful estimate of whatever timber is standing upon the tract, an estimate of the value of the tract as a whole for the production of timber, and the determination of its importance in regulating the flow of navigable streams.

(3) Approval of lands for purchase by the National Forest Reservation Commission and the fixing of the purchase price or prices. Approval for purchase is given only after recommendation has been made by the Secretary of Agriculture on the basis of the field examinations.

(4) Final negotiations with the owner or owners of land as to terms of sale.

(5) Examination of title.

(6) Actual conveyance of the title of the land by the owner to the Government and payment therefor by the Government to the owner.

#### AREAS WITHIN WHICH PROPOSALS FOR SALE ARE INVITED.

The areas roughly designated in the following descriptions have been selected as those within which proposals will first be invited. Lands chiefly valuable for agriculture are not desired, and where such lands occur within the areas described they will not be recommended for purchase, unless such lands occur in such small scattered areas that their exclusion would be impracticable.

#### *White Mountain Area, New Hampshire and Maine.*

Lands on the Carter-Moriah Range of mountains in the townships of Shelburne and Gorham, on the Presidential Range in the townships of Gorham and Randolph, on Cherry Mountain and the Dartmouth Range in the township of Carroll, and lands in the Low and Burbank Grant, Thompson and Meserve Purchase, Bean Purchase, Martin Location, Green Grant, Pinkham Grant, Bean Grant, Cutts Grant, Sargent Purchase, and Hadley Purchase, in the county of Coos in the State of New Hampshire; lands on the Franconia Range of Mountains, the Little River Mountains and the Rosebrook Mountains in the township of Bethlehem, the Franconia Range of Mountains in the townships of Franconia and Easton, on Mount Moosilauke, Mount Kineo and Mount Carr, in the township of Warren, on Mount Carr in the townships of Wentworth and Rumney, and Black Hill and Mount Kineo in the township of Ellsworth; lands above an altitude of 1,000 feet in the township of Woodstock; lands east of the Pemigewasset River in the township of Thornton; and lands in the townships of Benton, Waterville, Lincoln, and Livermore in the county of Grafton in the State of New Hampshire; lands above an elevation of 1,000 feet in the townships of Chatham, Jackson, Bartlett, and Albany, and on the Sandwich Range of Mountains in the township of Sandwich in the county of Carroll in the State of New Hampshire; and lands in Batchelders Grant in the county of Oxford in the State of Maine.



*Youghiogheny Area, Maryland.*

Lands in Garrett County, situated on the main watershed of the Youghiogheny River between the towns of Oakland and Friendsville, west of Hoopole Ridge and Negro Mountain.

*Potomac Area, Virginia and West Virginia.*

Lands in Virginia situated in Shenandoah County west of Stony Creek and Little North Mountain and south of Capola Mountain; lands in Rockingham County west of Little North Mountain and north of Slate Springs and Rawley Springs; lands in West Virginia in Pendleton County east of Moorefield River and north of Little Fork; lands in Hardy County east of Moorefield River and south of North River.

*Monongahela Area, West Virginia.*

Lands situated in Randolph County, on the watersheds of Dry Fork, Laurel Fork, Gladly Fork, and Shavers Fork, and on the watersheds of the eastern tributaries of Valley River south of the town of Elkins, and on the watershed of the West Fork of Greenbrier River; in northern Pocahontas County, lands situated on the watershed of Greenbrier River west of East Fork and Deer Creek, and north of the junction of the Greenbrier River and North Fork; and the lands on the upper watersheds of Shavers Fork of Cheat River.

*Massanutten Mountain Area, Virginia.*

Lands in Rockingham, Shenandoah, Warren, and Page Counties, situated between the North and South Forks of Shenandoah River, comprising in general Massanutten Mountain north of McGaheysville post office and south of Waterlick post office.

*Natural Bridge Area, Virginia.*

Lands situated on the Blue Ridge and outlying mountains in Northern Bedford County; in Botetourt County east of Buchanan and south of the James River; and in Rockbridge County south of the James River.

*White Top Area, Tennessee and Virginia.*

Lands comprising the main ranges of the Iron Mountains in northeastern Johnson County, Tenn. and eastward through Washington, Smyth, Grayson, and Wythe Counties, Va.

*Yadkin Area, North Carolina.*

Lands in Wilkes, Caldwell, and Watauga Counties, situated on streams flowing into the Yadkin River from the north lying west of the post offices of Louis Fork, Purllear, Mulberry, and Hall Mills.

*Mount Mitchell Area, North Carolina.*

Lands in Buncombe County situated on the Great Craggy Mountains; lands in Yancy County situated on the Black Mountains and South Toe River watershed south of the post office of Micaville; lands in McDowell County situated north of the main branch and west of the North Fork of the Catawba River; and lands in southwestern Mitchell County south of Brush Creek and West of Mica post office.

*Smoky Mountain Area, North Carolina and Tennessee.*

Lands in North Carolina situated in Haywood County north and west of Jonathan Creek and west of Pigeon River below the mouth of Jonathan Creek; in Swain County north of the little Tennessee and Tuckasegee Rivers; lands in Tennessee in Cocke County south of Denny Mountain and the Big Pigeon River; in Sevier County south of Chestnut Ridge, Galtinburg post office, and Cove Mountain; and in Blount County south of Round-top Mountain and Tuckaleeche post office and east of Hesse Creek and Abram Creek.

*Pisgah Area, North Carolina.*

Lands situated in Jackson County north of Little Hogback Mountain, Laurel Mountain, Sheep Cliff, and Shortoff Mountain, and east of Buck Knob, East Laport post office, and Carver Mountain, and south of the Asheville and Murphy Branch of the Southern Railroad; lands in Haywood County south of Pinnacle Knob, Snaggy Ridge, and the post offices of Three Forks, Cecil, Retreat, and Cruso; lands in Buncombe County south of Dunsmore post office and Stony Knob; lands in Henderson County west of Seniard Mountain and Buck Knob; and lands in Transylvania County north of the Hendersonville and Lake Toxaway Branch of the Southern Railroad, and Lake Toxaway, and west of the Boylston Creek.



*Nantahala Area, North Carolina and Tennessee.*

Lands in North Carolina in Swain County west of Little Tennessee River; lands in Macon County on the Nantahala Mountains and the watershed of the Nantahala River; lands in Clay County on Valley River Mountains, Tusquitee Mountain, Vineyard Mountain, and Chunky Girl Mountain; lands in Cherokee County on Valley River Mountains, Snowbird Mountains, and Unaka Mountains; lands in Graham County south of the Little Tennessee River; lands in Tennessee in Monroe County south and east of Salt Spring Mountain, Sassafras Mountain, and on the watershed of Tellico River above the mouth of Wild Cat Creek.

*Savannah Area, Georgia and South Carolina.*

Lands situated in Rabun and Habersham Counties, Ga., and in Oconee County, S. C., on the watershed of the Chattooga River above Ramsey Ferry; in Oconee County, S. C., on the watershed of the Chauga River; in Rabun County, Ga., on the watershed of the Tallulah River, south of Plumorchard Creek; in Habersham and White Counties, Ga., on the watersheds of Soque and Chattahoochee Rivers north of Pinnacle Mountain, Grimes Nose, and Yellow Mountain.

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THE CRAWFORD NOTCH

OUR frontispiece this month is a picture of the Crawford, or White Mountain, Notch in New Hampshire, looking south from Mt. Willard. The New Hampshire legislature has just authorized the purchase of the Notch, including about twelve thousand acres, for a state forest reserve. This deep valley, with its rugged and precipitous mountain walls and the tumultuous Saco plunging down its floor is one of the grand spectacles of the White Mountain country, and is the main pass into the heart of the mountains. It was discovered by Timothy Nash, a hunter, in 1771, and soon afterwards a road was built through it and it became the main highway between the northern and southern settlements of New Hampshire. The road runs along the tree covered floor of the valley and is much traveled by carriages and automobiles in summer. The railway runs along the western mountain side several hundred feet above the valley and from it the best views of the Notch are obtainable. The Notch proper extends from the Gate, a picturesque break in the rock wall, on the north near the Crawford House, for about three miles, dropping over six hundred feet in that distance. Then southward the valley gradually widens until it finally spreads out in the Conway intervalles. The forest which covers the valley floor and the mountain side of the Notch is not of the highest value commercially, but is of great scenic value to the Notch. It was about to be cut off when measures were taken to have the Notch purchased by the state. Hitherto it has not been a tempting ground for lumbermen because of the difficulty of lumbering on its steep mountain sides.

## EDITORIAL

### A NEW OPPORTUNITY

ELSEWHERE in these pages a suggestion is made of an opportunity now open to forest land owners in the Appalachian region to do a great public service by the gift of lands to the United States for the new eastern national forests. We may enlarge upon this by calling attention to the new and broad field for public benefaction the development of forestry in this country offers. We are living just now in an age of liberal giving for the public good. Schools and colleges, hospitals, scientific research, the promotion of the public health, the advancement of the peace of the world—all these are receiving assistance from our men and women of wealth to an extent unparalleled in the history of the world. As yet, notwithstanding the growing popular interest, forestry has not come into general recognition by those who are looking for ways and means to promote the welfare of society. Yet here is a field which as it comes to be better understood must be recognized as having a strong claim upon our generous givers.

A few have already seen the need and the opportunity. The late James W. Pinchot, and his distinguished son, Gifford Pinchot, were naturally among the first, for they had both the knowledge and the means. The late E. H. Harriman, through his gifts to New York, Mrs. Harriman and Mrs. Sage, through their gifts to the Yale Forest School, the group who provided Harvard University with the forest in Massachusetts for the work of the forestry department, and some others in lesser degree, have set the example; but the opportunity is big enough for much wider recognition.

There are the schools of forestry, many of which are doing admirable work, that could be greatly strengthened by the providing of larger funds and demonstration forests. Then there is the practical work of the national government and of the states, all of which is the people's work. We have suggested how the national government may be aided at the present time. In a similar way the work of the states can be advanced by financial aid on a generous scale. To be sure this, like all of our government work, must be sustained chiefly by the taxes contributed by all of the people; but forestry is peculiar in its needs and opportunities and at the present time these outrun the means or inclination of most of the states to meet them and there is no reason why endowments of forest lands and permanent funds for fire protection and other work in connection with their maintenance should not be bestowed upon the states, as endowments are bestowed upon so many semi-public institutions for all sorts of useful purposes. The time will ultimately come when forest work in this country will be self-supporting, but owing to the great area of the country and to the present undeveloped conditions of our forest resources, this point has not been reached and the interim can be bridged and the practicability of forestry can be better shown if given private assistance.

Finally, there are the forestry associations—the American Forestry Association, and those of many of the states which are doing a broad and useful popular educational work, most of them with insufficient funds which are eked out by the sacrifices of many unselfish workers. Endowments sufficient to

maintain the fixed charges of these organizations, or to carry on special lines of work which they have the opportunity, the knowledge and the desire to develop, would enlarge their usefulness and enhance their efficiency, making them more than ever real forces for the national welfare. In the case of these associations these endowments should not be large enough to put them beyond the need of popular support, in which lies their strength; but to put them in such a position that their activities need not be crippled and limited by entire dependence upon the necessarily small income from popular membership.

This suggestion is offered for careful consideration and investigation by those who have under consideration the opportunities that may be open to them for promoting the public welfare and the permanent prosperity of our people. The nature of forestry is peculiar. It is at once a business proposition and a public service work which entails some sacrifice of immediate business returns. For this reason it can better reach its full development if assisted, this assistance being an offset to the financial sacrifices which make men hesitate to practice it from a purely business standpoint.

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#### A FLANK ATTACK

Editor AMERICAN FORESTRY,  
Washington, D. C.

Dear Sir:

I have noted various comments regarding the effect that the amendment to the Agricultural Appropriation bill, proposed by Senator Heyburn in the closing days of the last Congress, would have upon national forests and national forest conservation. Knowing that the Senator has been a consistent opponent of the national forestry policy, I should assume that an amendment which he would propose would certainly not be helpful; yet I should like to have you state for the benefit not only of myself but of multitudes of your readers who are not so closely in touch with the situation as you are, the words of the amendment and show why limitation of the Forest Service work to areas growing 4,000 feet or more to the acre would be harmful.

Respectfully yours,  
"INQUIRER."

THE national forest system is too firmly entrenched to be openly assailed but it is still subject to flank attacks by those who realize the impossibility of securing a victory over it in the open. The Heyburn amendment to the agricultural appropriation bill, offered in the Senate at the last session of Congress, and thrown out on a point of order, provided for the elimination from the national forests of all land, in 160-acre tracts, containing an average of less than 4,000 feet of timber per acre. It might properly have been called an amendment to emasculate the national forests and was doubtless so intended by the author, whose perceptions, although somewhat slow on many subjects, are quick enough to see an opportunity to weaken the United States Forest Service and the national forest system. The proposed amendment was a shrewd move in that its real character would hardly be seen by one unacquainted with the conditions obtaining in the national forests. Let us see what the effect of the proposed elimination would be.

In the national forests there are three classes of lands which would be materially affected by the amendment: (1) extensive areas of chaparral in the southwest which can never grow merchantable timber but which are needed for the protection of watersheds. These are maintained by the government because of their conserving effect upon streamflow. They can never be a

source of income, but as long as they are protected they will be of great benefit to the regions in which they lie. (2) Areas covered with juniper, pinon and scrub oak which do not carry four thousand feet to the acre but do maintain a valuable supply of mine timber and wood for domestic use. It would be a serious injury to the country in which these are found to have them cut over and yet they have no considerable commercial value and the government is doing a service to the localities in maintaining and protecting them. (3) There are further extensive areas of half-grown and scattering growth, useful, yielding some return and having a protective and an increasing commercial value. These, of course, would have the protection of the government removed by the adoption of a provision like the Heyburn amendment.

Then there are burns found in patches through all the forests. Some of them are open grass lands. In many one hundred and sixty acre tracts these would be sufficient to lower the average timber stand per acre so as to throw out the whole tract, even though much of it might contain good commercial timber. These open tracts which have carried forests are potential forest lands but they are not bearing their four thousand feet of timber and the amendment would throw them out.

All lands undergoing or awaiting reforestation, natural or artificial, would be eliminated, although one of the most important elements of the forests. Likewise lands from which timber sales have been made, since the stand is usually cut down below four thousand feet, would be lost to the forests.

To remove all these classes of land would reduce the area of the national forests by millions of acres, but this is not the worst result of such a drastic course. Tracts in the classes we have described, together with bare mountain tops and other intervals in the forest growth, would make the national forests things of shreds and patches, impossible of administration. Consider for example the important problem of grazing control which is now being so well worked out. This could no longer be maintained if the national forests were disintegrated. Conditions would be produced which existed in some degree when the forests were first forming. It has been the study of the Service to consolidate and perfect the forests as administrative units. The results of this constructive work would be lost permanently if such a plan as that of the senior senator from Idaho should carry.

To describe its consequences shows the absurdity of such legislation and we do not believe there is much danger of such action being taken; but it is the kind of insidious attack which requires publicity to insure its defeat, and there is always a chance that some proposal of the kind will be advanced when legislation is being rushed through and there is little time to expose it. This warning seems all the more necessary since there has already been introduced into the present Congress a House joint resolution providing:

That the President be, and he hereby is, authorized and directed to eliminate all nontimbered agricultural lands from the forest reserves, from reclamation projects where there is no immediate prospect of such lands being used for reclamation purposes, and from withdrawals for power sites where such withdrawals are excessive, and to restore such lands so eliminated to entry under the homestead laws.

The author of this resolution which aims in less explicit terms at the same end as Senator Heyburn's amendment, is Mr. Lafferty, a new representative from Oregon, who came in under the progressive banner, which proves that forest conservation cannot depend upon the progressives for loyal and intelligent support. Representative Lafferty is also the author of a bill for turning over to the states in trust the national forest lands. This measure we shall consider at a later time, but the resolution above cited is too near the color of the Heyburn amendment to be passed over in this connection.

It must always be remembered that the Government has a great public service work to do with the national forests. It is not simply a question of maintaining great timber producing forests, it is a question of maintaining stream flow, of irrigation, of climatic conditions, of health and prosperity for the people which in many cases demand national expenditure without corresponding returns. This work is a great task of applied science and is necessarily placed in the hands of experts. To allow it to be demoralized for political purposes or private profit, which the Heyburn amendment or the Lafferty resolution would accomplish would be a crime against humanity.

#### THE PASSING OF THE PIONEERS

YOUNG as the forestry movement in America is, it is already old enough to begin to note the passing away of some of its veterans. While most of its active professional workers are young men with years of usefulness ahead of them, there are others to whom it owes a great debt—men who while not professionally concerned with forestry have had the foresight and the understanding to realize, in advance of general public intelligence, the significance of forestry, the relation of trees to man and to civilization; and who gave to that thought years ago their interest and their unselfish effort. To them as pioneers and advocates is due the advanced state of the movement today, and their names should be writ large in its history and remembered always for a great public service.

A few months ago William Henry Brewer, for thirty years Norton professor of agriculture in the Sheffield Scientific School of Yale University, joined the great majority, full of years and honors. Professor Brewer was one of a type of scientific men none too common, whose range of vision went far beyond any specialty. The late Professor Shaler of Harvard was another of the same type. These men looked deeply into many things. Their minds were in the highest degree constructive. Their thought saw the relation of different fields of science and coordinated them. Both of them knew their country as few men have known it. They traveled over it, searched its hidden recesses, studied its resources, and appraised their value and their interdependence with keen insight. Professor Marsh, also a Yale man, was another of this broad-minded type of scientific thinkers and his contribution to forestry is well known and still classic. Professor Brewer was not a writer so much as a teacher and inspirer of others, and so his work for forestry is less known to the public except to those who came in contact with him and derived suggestion and inspiration from that contact. In this way his influence was great, and he must be reckoned as one of the chief promoters of the great movement which is becoming a distinct part of our economic life and finding its place in applied science as well as in the sentiment of the people. He was one of the committee appointed by the government from the National Academy of Sciences to investigate the condition of the forests of the country and to formulate a plan for their maintenance and increase. The work and recommendations of this commission were largely responsible for the formation of the present United States Forest Service. He was a member of the governing board of the Yale Forest School and for several years was a lecturer of the school on forest physiography.

Since the April number of AMERICAN FORESTRY went to press, another veteran worker whose service was intimately connected with the beginnings of the American Forestry Association, has left us. Judge Warren Higley, who died in New York on the 24th of March, after an active and honorable educa-



tional career of over ten years entered upon the practice of law in Cincinnati in 1874 and in that city, in 1882, became one of the founders of the American Forest Congress. This body became a few years after the American Forestry Association, and Judge Higley was its president in 1885-6. Through the remainder of his life he took an active interest in the forestry movement and gave his assistance to it in generous measure. He was until the last three or four years a regular attendant at the annual meetings of the American Forestry Association and a particularly intelligent and interested participant in its activities. He was a founder of the Association for the Protection of the Adirondacks, which has accomplished so much in preventing the destruction of New York's noble forest domain.

No one who knows the history of the American Forestry Association and the extent and value of its achievements, can fail to honor the loyalty and courage of the faithful few, of whom Judge Higley was one, who through years of public ignorance and difference maintained the worth of their cause until the country was compelled to recognize and incorporate it in a great national policy.

American citizenship as well as American forestry is better for such men and their work.

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#### PLANTING FOR PULP AND TIMBER

**H**USTIN F. HAWES, state forester of Vermont, has an article in *Paper* of March 29th on the planting of forests for pulp and timber, which should be helpful, as it is practical and conservative in tenor. His opening sentence strikes the keynote: "Prices of soft-wood lumber and pulp wood are now getting so high that forest planting of quick growing species is a sound business policy under certain conditions." He qualifies this, however, by saying that "it is useless to advocate the investment of money in the purchase and reforestation of waste lands on a large scale at present because so much better and quicker producing investments can be made in natural second growth."

In many cases in New England and northern New York, lands can be purchased from which soft woods have been culled but covered with a vigorous second growth of fir, spruce or pine at prices that in a few years will yield a handsome profit, yielding more in fifteen years than the average plantation at thirty years. There are other conditions, however, in which forest planting is advisable, as on non-productive lands such as abandoned farm pastures. Lumber and pulp companies buy much property containing such tracts and as they buy on the basis of the timber value, the open land is virtually free, so that planting can be done for the cost of seedlings and labor. The reduction of the fire risk in the eastern states by better systems of protection, Mr. Hawes points out, is removing the chief risk attached to such investments, and the young, growing trees steadily enhance the value of the land. He gives the following reasons why pulp companies should plant:

- (1) They have extensive plants which must be supplied from the tributary region.

- (2) They own large areas of waste land representing little investment.

- (3) The materials used are not required in large dimensions; and are of soft, rapid growing species, so that a crop can be secured in the minimum length of time.

Mr. Hawes discusses species and ways and means quite fully, suggesting the value of Norway spruce and Canadian or white spruce, and white pine,



the character of the soil determining the variety that is best adapted in each instance. He recommends the use of seedlings as, in the long run, cheaper and more satisfactory than growing from seed, and describes concisely approved methods. A table of the cost of planting one hundred acres shows the average cost per acre to range from \$6 to \$9.50, according to the cost of labor and seedlings. These figures are based on the actual experience of the Vermont Forest Service and of the International Paper Company on its work in Vermont and New Hampshire. He cites actual results from white pine plantations in Connecticut which have grown with practically no care, comparing them with two plantations of American white pine in Germany which have received the careful management characteristic of the planted forests of Germany. The results are naturally slightly in favor of the German forests, but Mr. Hawes believes that so far as soil is concerned there is no reason why we should not attain as good results as the European foresters, and that the difference is solely due to the management of the plantations.

This article is interesting as suggesting the considerations that must enter into the problem of planting by American land owners. Like many other forestry questions that are so new to our people, this has been frequently discussed in too general a way and the statements made have not given due consideration to all the factors involved in the problem. As we have urged frequently, the time has now come when these problems must be studied with close regard for all the factors that go to make up the sum of the result. Recently when seeking for articles on certain phases of tree planting for AMERICAN FORESTRY we found one or two foresters who were inclined to decry the whole idea of forest planting as being worthless for our conditions. It seems to us that their position is an extreme one which has been taken without due consideration and as a result of an excess of enthusiasm for planting shown on the other side. However, this may be there can be no question that, although it is far from being all there is in forestry, planting has a place of increasing importance in our forestry operations, especially in our more thickly settled states.

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#### THE CRAWFORD NOTCH SAVED

The passage by the New Hampshire legislature of the bill providing for the purchase by the state of the Crawford Notch is a triumph that so far as the state itself is concerned is on a par with the passage of the Weeks bill by Congress. The Crawford Notch purchase will institute a state policy in harmony with the new national policy that should ultimately make of the White Mountain country a great combined state and national forest protected from fire, its forest crops carefully husbanded, its scenic values preserved—a never failing source of health and wealth to the people.

The final passage of the bill in both houses by a unanimous vote would make us wonder at the delay and at the doubt as to its final success if we did not know the devious ways by which legislatures reach their conclusions. Evidently its friends did effective work, and Governor Bass, whose influence was felt throughout in behalf of the bill, has made himself already a force to be reckoned with. There was objection to the original appropriation of one hundred thousand dollars and as finally passed the amount to be paid was placed at the discretion of the governor and council, a much more business-like arrangement.

We congratulate the state and the Society for the Protection of New Hampshire Forests, and we congratulate the thousands of people who annually enjoy the rugged beauty of this noble mountain pass.

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- Indian forester, Nov.-Dec., 1910.—Transport of forest produce, p. 631-3; A short description of the state pine forests of the Landes and Gironde departments, by R. C. M., p. 633-51; Forestry education; its importance and requirements, by E. P. Stebbing, p. 652-72; Teak in Burma, p. 672-5; The bamboo forests of the Ganges division, by B. A. Rebsch, p. 675-9; Fire conservancy in Indian forests, by H. C. Walker, p. 679-86; Forestry in Korea, p. 745-6.
- Revue des eaux et forêts, March 1, 1911.—Alpes et forêts, by A. Schaeffer, p. 129-32.
- Revue des eaux et forêts, March 15, 1911.—Forêts, statistiques, inondations, by P. Buffault, p. 161-9.
- Zeitschrift für forst- und jagdwesen, Feb., 1911.—Die ankaufspolitik der preussischen staatsforstverwaltung in Westpreussen und Posen, by Semper, p. 65-96.
- Notes on Recent Publications**
- The Arbor Day Annual for 1911 issued by the Education Department of the state of New York is an attractive, interesting, and instructive pamphlet, and decidedly out of the ordinary among publications of its class for the scope and value of its contents. The opening article is by Andrew



S. Draper, commissioner of education, on "Arbor Day and Forestry." There are also articles on the forests of the state, the lumber industry, and European forestry, the latter by Professor Toumey, of the Yale Forest School. Much useful information is also included. The suggested outline for the use of teachers is excellent as far as it goes, but there are some omissions which can easily be filled in. The general scheme as given will put any interested and capable teacher on the right track. A similar comment may be made on the bibliography, which contains some strange omissions. Nevertheless the teacher or student who uses these helps will soon be guided to the more complete bibliographies. If every state issued an annual like this Arbor Day would acquire a real educational value which it now generally lacks.

*Field and Stream*, the official organ of the Camp-Fire Club of America, began in November, 1910, the publication of a valuable series of papers by its editor, Warren H. Miller, on "European Forestry." Mr. Miller writes from an experience of several years in the German, French, and Swiss forests, and treats the subject from the point of view of American conditions and needs. General conditions, forest management, the selective forest and standard coppice, the forestry nursery, reforestation, and applications to American practice are the topics that have been so far treated.

The articles are to appear in book form after their serial publication is completed.

The Annual Report of the State Forester of Massachusetts deals, as usual, with the two divisions of general forestry and gypsy and brown-tail moth suppression. The important phases of the work of this state service have been noted from time to time and the report does not, therefore, call for extended review. Governor Foss has recently had an investigation made of the forest service and has made recommendations, some of which are likely to be highly detrimental if carried out. One of these is to combine the forest service with the fish and game commission. In view of the fact that the Massachusetts Forest Service has been built up as an independent service, and the organization of the fish and game commission is so different, and its work so different, it does not seem, even if there is need of a change in the forest service, that it should be made in this way. This seems to be one of attacks which are frequently made upon the service, less for its own good than for the exploitation of the ideas of people more or less inimical to it. The governor is undoubtedly sincere in his purpose but he is said to be overworking and has probably not given sufficient study to the matter or has been badly advised. That some changes are needed may be admitted, but they should be made in the right way.

## NATIONAL FOREST WORK

### Appropriation for the Forest Service

The total appropriation for the Forest Service for the fiscal year ending June 30, 1912, is \$5,533,100. Of this the salary list of regular employees fixed by statute calls for \$2,316,680. This covers the force of supervisors and rangers who care for the national forests, as well as office employees. The general expenses require \$2,714,420. These expenses are enumerated as follows:

To enable the Secretary of Agriculture to experiment and to make and continue investigations and report on forestry, national forests, forest fires, and lumbering, but no part of this appropriation shall be used for any experiment or test made outside the jurisdiction of the United States; to advise the owners of woodlands as to the proper care of the same; to investigate and test American timber and timber trees and their uses, and methods for the preservative treatment of timber; to seek, through investigations and the planting of native and foreign species, suitable trees for the treeless regions; to erect necessary buildings: Provided, That the cost of any building erected shall not exceed six hun-

dred and fifty dollars; to pay all expenses necessary to protect, administer, and improve the national forests; to ascertain the natural conditions upon and utilize the national forests; and the Secretary of Agriculture may, in his discretion, permit timber and other forest products cut or removed from the national forests, except the Black Hills National Forest in South Dakota, to be exported from the state, territory, or the district of Alaska in which said forests are respectively situated: Provided, That the exportation of dead and insect-infested timber only from said Black Hills National Forest shall be allowed until such time as the forester shall certify that the ravages of the destructive insects in said forests are practically checked, but in no case after July first, nineteen hundred and twelve; to transport and care for fish and game supplied to stock the national forests or the waters therein; to employ agents, clerks, assistants, and other labor required in practical forestry and in the administration of national forests, in the city of Washington and elsewhere; to collate, di-



gest, report, and illustrate the results of experiments and investigations made by the Forest Service; to purchase law books to an amount not exceeding five hundred dollars, necessary supplies, apparatus, and office fixtures, and technical books and technical journals for officers of the Forest Service stationed outside of Washington; to pay freight, express, telephone, and telegraph charges; for electric light and power, fuel, gas, ice, washing towels, and official traveling and other necessary expenses, including traveling expenses for legal and fiscal officers while performing Forest Service work; and for rent in the city of Washington and elsewhere, as follows:

For salaries and field and station expenses, including the maintenance of nurseries, collecting seed, and planting, necessary for the use, maintenance, and protection of the national forests. (The specific allotment for each forest is then designated in the bill.)

For fighting forest fires and for other unforeseen emergencies, one hundred and fifty thousand dollars, of which sum seventy thousand dollars shall be immediately available.

For the purchase and maintenance of all necessary field, office, and laboratory supplies, instruments and equipment, one hundred and ninety-eight thousand and eighty dollars;

For investigations of methods for wood distillation and for the preservative treatment of timber, for timber testing and the testing of such woods as may require test to ascertain if they be suitable for making paper, and for other investigations and experiments to promote economy in the use of forest products, one hundred and seventy-seven thousand and forty dollars;

For experiments and investigations of range conditions within national forests, and of the methods for improving the range by reseeding, regulation of grazing, and other means, eighteen thousand four hundred and twenty dollars;

For silvicultural and other experiments and investigations within national forests necessary for tree planting, for the reproduction of existing forests, and the regulation of cutting, one hundred and sixty-six thousand six hundred and forty dollars;

For silvicultural, dendrological, and other experiments and investigations independently or in cooperation with other branches of the federal government, with states and with individuals, to determine the best methods for the conservative management of forests and forest lands, eighty-four thousand five hundred and twenty-eight dollars;

For market and other miscellaneous forest investigations, and for collating, digesting, recording, illustrating, and distributing the results of the experiments and investigations herein provided for, thirty-

three thousand seven hundred and sixty dollars;

Provided, That no part of the money herein appropriated shall be used to pay the transportation or traveling expenses of any forest officer or agent except he be traveling on business directly connected with the Forest Service and in furtherance of the works, aims, and objects specified and authorized in and by this appropriation: Provided further, That no part of this appropriation shall be paid or used for the purpose of paying for, in whole or in part, the preparation or publication of any newspaper or magazine article, but this shall not prevent the giving out to all persons without discrimination, including newspaper and magazine writers and publishers, of any facts or official information of value to the public: Provided further, That so much of an Act entitled "An act making appropriations for the Department of Agriculture for the fiscal year ending June thirtieth, nineteen hundred and eight," approved March fourth, nineteen hundred and seven (Thirty-fourth Statutes at Large, pages twelve hundred and fifty-six and twelve hundred and seventy), which provides for refunds by the Secretary of Agriculture to depositors of moneys to secure the purchase price of timber or the use of lands or resources of the national forests such sums as may be found to be in excess of the amounts found actually due the United States, be, and is hereby, amended hereafter to appropriate and to include so much as may be necessary to refund or pay over to the rightful claimants such sums as may be found by the Secretary of Agriculture to have been erroneously collected for the use of any lands, or for timber or other resources sold from lands located within, but not a part of, the national forests, or for alleged illegal acts done upon such lands, which acts are subsequently found to have been proper and legal; and the Secretary of Agriculture shall make annual report to Congress of the amounts refunded hereunder.

The law further designates the expenditure of \$500,000 for "improvement of national forests:"

For the construction and maintenance of roads, trails, bridges, fire lanes, telephone lines, cabins, fences, and other permanent improvements necessary for the proper and economical administration, protection, and development of the National Forests, not to exceed fifteen per centum of the total of all sums appropriated under "General Expenses, Forest Service," and under "Improvement of the National Forests," may be used in the discretion of the Secretary of Agriculture as provided above under "General Expenses, Forest Service," and under "Improvement of the National Forests," for all expenses necessary for the general administration of the Forest Service.

'An examination of this appropriation

measure sustains a point made in an editorial in this magazine a few months ago, that the manner of expenditure of the funds entrusted to the Forest Service is quite closely determined by Congress itself and the charges in regard to the expenditures of the Service made by some senators and representatives for political effect therefore fall to the ground.

### Boundary Changes

A recent presidential proclamation has eliminated 276,424 acres in California from the Inyo National Forest and added 80,532 acres, the greater part of which is located in California, with a small portion lying in Nevada. Most of the land eliminated lies along the Owens River Valley, where the question as to the proper boundary for the forest has been much discussed. The Owens River settlers have been urgent to

have the forest area reduced, but the representatives of the city of Los Angeles have regarded the retention of the land by the government as essential to the success of its great aqueduct project, intended to assure the municipality an abundant supply of pure water from the Sierras, 250 miles away. The elimination now made is the result of an agreement finally arrived at by representatives of the Owens River settlers, the Forest Service, and the city of Los Angeles whereby the conflict of views and interests was adjusted on a basis which commands the assent of all parties.

The president also signed a proclamation adding 141,123 acres to the Fishlake National Forest, Utah. The same proclamation eliminates 1,276 acres from the forest. Both changes in the forest boundary take place in the eastern division, in Sevier and Wayne counties. No change is made in the boundary of the western (Glenwood) division.

## STATE WORK

### California

Forestry and conservation measures have been subjects of contention in the California legislature but the senate on March 22d passed the assembly bill creating a California Conservation Commission and appropriating \$100,000 for its work in the next two years. The commission is to consist of five members, to be appointed by the governor, and to serve without compensation beyond having their actual expenses paid. The commission is to gather data and information concerning forestry, water and water-power, electricity, mines and mining, mineral and other lands, dredging, reclamation and irrigation, and is to advise the next legislature what laws should be passed.

### Maine

Governor Plaisted on Monday, April 10, appointed Frank E. Mace to succeed Edgar E. Ring, as state forest commissioner and land agent. Mr. Ring had held the office for ten years.

### Michigan

The *Grand Rapids Press* says: If Michigan is to have forest reserves the \$30,000 asked by the public domain commission to carry on the work should be granted. To provide a body with the powers accorded this and then to deny it the means to carry on its work is a policy which will

land the state nowhere. With the present attention being given to the development of western Michigan the need for the appropriation sought becomes apparent.

The bill, which has passed the senate and now is in the hands of the committee on ways and means in the house, provides for an immigration bureau and in addition authorizes the commission to inaugurate a vigorous conservative policy. The former feature alone means much to this section of the state. Settlers on the land now unoccupied would bring a wide and substantial prosperity to this district, endowed by nature with great possibilities and lacking only men and women to reap and distribute the benefit of its resources. If these practical aims are to be achieved and the 280,000 acres set aside as forest reserves are to be protected from fire and waste money must be provided. The \$9,500 under which the forestry commission, which preceded the present body, operated is inadequate for the big work which must be done. The reserves now are scattered in fifty-five counties, while the former appropriation was for the care of but two reserves or a total of about 45,000 acres.

The presence on the commission of Charles W. Garfield, of Grand Rapids, should be an assurance to the representatives from this district that concrete results are within reach for every dollar expended. Mr. Garfield's long experience in this particular field is a guarantee that the money will not be wasted.

### The New Minnesota Law

After a somewhat protracted fight the Minnesota legislature has passed a comprehensive state forest law "to provide for the preservation of forests in this state and for reforestation and for the prevention and suppression of forest and prairie fires." The act repeals earlier laws inconsistent with it. It establishes a state forestry board, with a state forester, and a suitable appropriation, and it removes the inconsistency of a forestry board without power, and a forestry commissioner serving under the state auditor. The text of the act is given herewith, as it will be of great interest to students of state forestry legislation:

Section 1. There shall be a state forestry board, of nine members, composed of the director of the forestry school and the dean of the agricultural college of the University of Minnesota and seven others appointed by the governor, for a term of four years and until their successors qualify. Three of said members shall be appointed upon the recommendation of the regents of the university, and, of the other four, one shall be appointed upon the recommendation of each of the following bodies: The State Forestry Association, the State Agricultural Society, the State Horticultural Society, and the State Game and Fish Commission—provided suitable persons be recommended by them to the governor not later than January 31 of the year in which such terms expire. All vacancies shall be filled the same as the original appointments. The members now in office shall hold through the terms for which they were respectively appointed. So far as practicable, all such appointees shall be appointed with reference to their knowledge of and interest in the planting and cultivation of trees in prairie regions, the preservation of natural forests, the reforestation of denuded lands, and the protection of the sources of streams.

Sec. 2 The State Forestry Board shall appoint a secretary at a salary not to exceed eighteen hundred (1800) dollars per annum, whose duties shall be prescribed by the board.

Sec. 3. The board shall have the management of the forest reserves and of all other property acquired therefor, supervise all matters of forest protection and reforestation and have charge of all moneys appropriated therefor or accruing therefrom, including the forest reserve fund and the forest service fund. It shall ascertain and observe the best methods of reforesting cut-over and denuded lands, foresting waste and prairie lands, preventing destruction of forests and lands by fire, administering forests on forestry principles, encouraging private owners to preserve and grow timber for commercial purposes, and conserving the forests around the head

waters of streams and on the watersheds of the state, and shall collect information regarding the timber lands owned by the state. On or before the first Monday in December of each year the board shall report its doings, conclusions and recommendations, and any damage caused by forest and prairie fires and any trespassing upon the state lands to the governor, which report shall be printed and distributed to the members of the legislature and otherwise as the board may direct.

Sec. 4. The board shall elect a president and vice president annually. It may appoint an executive committee on which it may confer authority to act for it in minor details which cannot conveniently be acted upon by the board. The board shall appoint a state forester who shall be a trained forester, at a salary not to exceed four thousand (4,000) dollars per annum, and he shall be allowed necessary traveling and field expenses incurred in the conduct of his official duties. The office of the state forester shall be at the state capitol and the board is hereby authorized to employ such office assistants as may be necessary and to fix their compensation. The state forester, with the approval of the state forestry board, may appoint an assistant forester and such other employees, outside of the office assistants, as may be necessary in carrying out the provisions of this act and fix the amount of their compensation; and the state forester shall have the power to remove any of such subordinate officers and employees so appointed by him. He shall be authorized under the direction and approval of the state forestry board to purchase all necessary equipment, instruments and field supplies. A full and accurate account of all receipts and expenditures incurred in the carrying out of the provisions of this act, with such vouchers and forms as may be recommended by the state public examiner, shall be kept in a system of books prescribed by such examiner. The state forester shall execute all rules and regulations issued by the state forestry board pertaining to forestry and forest protection within the jurisdiction of the state; have charge of the work of protecting all forests and lands from fire; shall investigate the origin of all forest fires, and prosecute all violators of this act; shall prepare and print for public distribution an abstract of the forest fire laws of Minnesota, together with such rules and regulations as may be formulated by the state forestry board. He shall prepare printed notices calling attention to the dangers from forest fires and cause them to be posted in conspicuous places, and shall furnish same to the railroad companies whose duty it shall be to post them in such places as he may direct.

Sec. 5. The state forester shall become familiar with the location and area of all

state timber cut-over lands and prepare maps of forest reserves and each of the timbered counties showing the state lands therein, and shall supply such maps to the district rangers, to the officials of the state and counties requiring them, and in all ways that are practical and feasible shall protect such lands from fire and the illegal cutting of timber; he shall report from time to time to the board, such information as may be of benefit to the state in the care and management of its timber; it shall be his duty to inquire into the extent, kind, value and condition of all timber lands; the amount of acres and value of timber that is cut or burned, and he shall also report the quantity and species of second-growth timber, and shall not later than the first of December of each year make a written report to the state forestry board upon all such data ascertained by him, and shall recommend therein plans for improving the state system of forest protection, management, and reforestation.

Sec. 6. The state forester shall cooperate with the state auditor and with the several departments of the state and federal governments, or with counties, towns, corporations, and individuals, in the preparation of plans for forest protection, management, replacement of trees, wood lots, and timber tracts, using his influence as time will permit toward the establishment of scientific forestry principles in the management and promotion of the forest resources of the state.

Sec. 7. The state forester shall also cooperate with the state highway commission and with the supervising officers of the various towns and villages in the construction of fire-breaks along section lines and public highways.

Sec. 8. The state forester may advance, as he deems wise, education in forestry within the state by publications and lectures, and upon the invitation of the director of the college of forestry of the University of Minnesota may cooperate with the said college so far as his time will permit, and such college shall furnish such aid to him as in the circumstances is consistent with its own proper functions.

Sec. 9. It shall be the duty of the state forester to audit and inspect all bills for salary and expenses incurred by the district rangers and by fire patrolmen for the suppression, checking and control of fires and recommend to the forestry board the amounts justly due and which should be paid.

Sec. 10. As soon as practicable after this act shall take effect, the state forester may, with the approval of the state forestry board, create and establish patrol districts, including all lands of both state and private ownership, upon which there is a probability of forest and brush fires starting, and establish rangers over the said districts.

Sec. 11. Under the direction of the state forester, the district rangers are charged with preventing and extinguishing forest fires in their respective districts, and the performance of such other duties as may be required by the state forester.

They may arrest without warrant any person found violating any provisions of this chapter, take him before a magistrate and there make complaint. When the district rangers shall have information that such violation has been committed, they shall, without delay, make similar complaint, and have the same prosecuted. The district rangers shall not be liable for civil action for trespass committed in the discharge of their duties.

Sec. 12. At any time district rangers, with the approval of the state forester, may employ suitable persons to be known as fire patrolmen, permanently to remain upon and patrol such territory, state or private, as may be assigned to them as long as may be required to prevent and extinguish any fire. Each such patrolman so employed shall be supplied with the necessary equipment. The state forester and the district ranger may, and, if they are absent and fires are actually burning in the forest, the fire patrolmen may, summon any male person of the age of 18 years and upwards to assist in stopping the fire, and may incur any other necessary and reasonable expense for the same purpose, but shall promptly report the same to the district ranger.

Any person summoned by any official of the state who is physically able and refuses to assist shall be guilty of a misdemeanor and shall be punishable by a fine of not less than \$5.00 and not more than \$25.00.

Sec. 13. When in the judgment of the state forester there is danger of the setting and spreading of fires from locomotive engines, he shall order any railroad company to provide patrolmen to follow each train throughout such fire patrol district or districts as he deems necessary to prevent fires. When the state forester has given a railroad company notice to provide such patrol after trains, the said railroad company shall immediately comply with such instructions throughout the territory designated; and upon its failure so to do, the state forester may employ patrolmen with the necessary equipment to patrol the rights of way of said railroad, and the expense of the same shall be charged to the said railroad company and may be recovered in a civil action in the name of the state of Minnesota, and in addition thereto, the company shall be guilty of a misdemeanor.

It is also made the duty of any railroad company, acting independently of such state forester, to patrol its right of way after the passage of each train when necessary to prevent the spread of fires and to use the highest degree of diligence to prevent the setting and spread of fires, to

cause the extinguishment of fires set by locomotives or found existing upon their respective rights of way and for any violation hereof such railroad company, its officers and patrolmen shall be guilty of a misdemeanor, and be punished by a fine of not less than fifty (50) dollars, nor more than one hundred (100) dollars and costs, and in addition thereto such railroad company shall be liable for all damages caused or permitted by it.

Section 14. Every company operating a railroad for any purpose shall equip and use upon each locomotive engine a practical and efficient spark arresting device which the master mechanic shall cause to be examined, and the same shall be examined by the master mechanic or some employee each time before leaving the roundhouse, except when snow is on the ground, and the master mechanic, or employee making such examination, shall be held responsible for the good condition of the same, but without relieving the company from its responsibility hereunder.

Every such company shall keep its right of way clear of combustible materials, except ties and other materials necessary for the maintenance and operation of the road, from April 15th to December 1st.

No company shall permit any of its employees to leave a deposit of fire, live coals or ashes in the immediate vicinity of wood land or lands liable to be overrun by fire, and every engineer, conductor or trainman discovering a fire adjacent to the track shall report the same promptly to the agent at the first telegraph or telephone station reached by him, whose duty it shall be as representative of such company, to at once take necessary steps to put out such fire.

Every such company shall give its employees particular instructions for the prevention and extinguishment of fires, and shall cause warning placards furnished by the state forester, to be conspicuously posted at every station in the vicinity of forest, brush, and grass lands, and, when a fire occurs on the right of way of its road, shall immediately concentrate such help and adopt such measures as shall be available for its extinguishment.

Any company violating any provisions of this section shall be deemed guilty of a misdemeanor, and on conviction thereof, shall be fined not less than fifty dollars and not exceeding one hundred dollars and costs of prosecution for each offense, and any railroad employee violating the same shall be guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars and costs of prosecution, or by imprisonment in the county jail not exceeding ninety days.

Sec. 15. Where and whenever in the judgment of the state forester there is or may be danger of starting and spreading of fires

from slashings and debris from the cutting of timber of any kind and for any purpose, the state forester will notify the individual, firm or corporation, for and by whom the said timber has been or is being cut, ordering them to dispose of the slashings and debris as he may direct. Where conditions do not permit the burning of the slashings and debris over the entire area so covered, the state forester may require the person, firm or corporation for and by whom the timber was cut, to dispose of such slashings and debris in such a way as to establish a safe fire line around the area requiring such protection, the said fire line to be of a width and of a character satisfactory to the state forester.

When any person, firm or corporation, shall have been notified by the state forester to dispose of slashings and debris, either by entirely consuming the same or establishing a fire line sufficient for the protection of adjoining property, and fails to comply with such instructions, the said person, firm or corporation shall be deemed guilty of a misdemeanor, and on conviction thereof, shall be punished by a fine of not less than \$50.00 and not exceeding \$100.00 and costs of prosecution for each violation thereof or failure to comply therewith.

When any such branches, slashings or debris are left unburned contrary to the instructions of the state forester, the state forester may go upon the premises with such force of men as may be necessary, and burn such branches, slashings and debris, and the expense thereof shall be a lien upon the land on which they are situated, enforced as liens for the improvement of real estate are enforced, and such expense shall be a prima facie valid claim that may be collected from the person, firm or corporation who cut the timber or wood from which the said slashings and debris were made.

Sec. 16. Any person or corporation who cuts or fells trees or bushes of any kind in clearing land for roadbed or right of way for any railroad, highway or trail shall in the manner and at the time as above prescribed burn the slashings, and all combustible material except fuel and merchantable timber.

Any person or corporation who cuts or fells trees or bushes of any kind in clearing land for agricultural or pasturage purposes, or who in any way clears land, is prohibited from setting fire to the slashings, brush, roots or excavated stumps or other combustible material on such land and letting the fire run; the material must be disposed of pursuant to the regulations of the state forester.

Any person who shall violate any of the provisions of this section shall be deemed guilty of a misdemeanor, and on conviction thereof, be punished by a fine of not less than twenty-five dollars, nor more



than one hundred dollars, or by imprisonment in the county jail for not less than ten days nor more than ninety days.

Sec. 17. The wages and expenses of men summoned or employed to fight forest fires actually burning, shall be fixed and paid for by the state forester and the labor reckoned and paid for by the hours of labor performed, which shall not exceed the rate of 25 cents per hour employed; provided no pay shall be given for fighting fire within one mile of the residence of such person unless employed by the state forester or his assistants. The forestry board is authorized to draw out of the money appropriated by this act a reasonable sum, not to exceed five thousand (5,000) dollars at any one time, from the state treasurer and place the same in the hands of the state forester to be used by him in paying emergency expenses, and the state auditor is authorized to draw his warrant for such sum when duly approved by the president and secretary of said board. The state forester shall take proper sub-vouchers or receipts from all persons to whom such funds are paid and after the same have been approved by the state forestry board, they shall be filed with the state auditor.

Sec. 18. Every employe of the state forestry board and every person lawfully commanded to assist in enforcing any of the provisions of this chapter, who shall unjustifiably refuse or neglect to perform his duty; every person who shall kindle a fire on or near forest, brush, or prairie land and leave it unquenched, or be a party thereto, or who shall set fire to brush, stumps, dry grass, field, stubble, or other material and fail to extinguish the same before it has endangered the property of another; every person who shall negligently or carelessly set fire, or cause to be set on fire, any woods, prairie, or other combustible material, whether on his own land or not, by means whereof the property of another shall be endangered, or who shall negligently suffer any fire upon his own lands to extend beyond the limits thereof; every person who shall use other than incombustible wads for firearms, or carry a naked torch, firebrand, or exposed light in or near forest land, or who, in the vicinity of such land, shall throw or drop into combustible material any burning match, ashes of pipe, lighted cigar, or any other burning substance, and who fails to immediately extinguish the same, and every person who shall deface, destroy or remove any abstract or notice posted under this chapter shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not less than twenty-five dollars and not exceeding one hundred dollars and costs of prosecution or by imprisonment in the county jail not less than ten days and not exceeding ninety days.

Sec. 19. All villages and cities in the state situated in the timber area are hereby authorized, and all such municipalities where the same is possible so to do are hereby directed, to clear off all combustible material and debris and create at least two good and sufficient fire-breaks of not less than ten feet in width each, which shall completely encircle such municipalities at a distance of not less than twenty rods apart, between which backfires may be set or a stand made to fight forest fires in cases of emergency.

It is hereby made the duty of the district rangers to report to the state forester any failure to comply with the provisions of this section or any violation of this act and any failure so to do shall be punished by a fine of not less than twenty-five dollars, nor more than one hundred dollars.

Sec. 20. Every road overseer or assistant of a road overseer or other local officer having charge of the highway, who finds that any person has left a camp fire burning in his district, shall extinguish the same, and take prompt measures to prosecute the person or persons who so left such fire.

Sec. 21. Every person who, when the ground is not covered with snow, starts a fire for any purpose not hereinafter specified in this act, in the vicinity of forest or prairie land, shall exercise every reasonable precaution to prevent such fire from spreading, and shall before lighting the same clear the ground from all branches, brushwood, dry leaves and other combustible material within a radius of ten feet from the fire, and shall carefully extinguish the fire before quitting the place.

Sec. 22. Whoever under any circumstances sets fire must exercise care and precaution in proportion to the danger.

Whenever a fire set by any person or corporation spreads to and destroys property belonging to another, it shall be prima facie evidence that the party so setting such fire is guilty of negligence in setting the same and allowing it to spread.

Sec. 23. No appeal shall be allowed from a judgment in justice's court in any prosecution under this chapter unless the person appealing shall, within the legal time prescribed, enter into a recognizance with two sufficient sureties, surety company or cash bail, in twice the amount of the fine and costs, to be approved by the justice, conditioned to appear before the district court on the first day of the general term thereof next to be held in and for the same county, and abide the judgment of said court therein.

The justice may examine the proposed sureties under oath, and in such case shall make and keep a record of their answers in respect to the kinds and



amount of their property that is not exempt from execution, and furnish a copy of the same to the state forester.

Sec. 24. The supervisors, constables and clerks of towns, mayors of cities and presidents of village councils, are hereby constituted fire wardens for their respective districts, and it is hereby made their duty to do all things necessary to protect the property of such municipalities from fire and to extinguish the same.

All towns, villages and cities are hereby authorized and directed to take necessary precautions to prevent the starting and spreading of forest or prairie fires and to extinguish the same and are hereby further authorized to annually levy a tax of not more than five mills upon the taxable property of such municipalities, which, when collected, shall be known as the "Fire Fund" which may be used in paying all necessary and incidental expenses incurred in enforcing the provisions of this act.

In all townships constituted within any of the forest patrol districts which may be established by the state forestry board, the respective town and village officers shall cooperate as far as possible with and act under the general supervision and direction of the state forestry officers.

Sec. 25. All moneys received as penalties for violations of the provisions of this act, less the cost of collection and not otherwise provided for, shall be paid into the treasury of the county in which the penalties for said violation of the provisions of this act were imposed.

Sec. 26. There is hereby appropriated from the general revenue funds of the state out of any moneys not otherwise appropriated the sum of \$15,000 for the fiscal year ending July 31, 1911, \$75,000 for the fiscal year ending July 31, 1912, and \$75,000 for the fiscal year ending July 31, 1913, which shall be credited to the Forest Service to be used therefor as provided in this act. The manner of presenting claims to the state auditor and payment of the same shall, so far as practicable, be in accordance with Chapter Ninety-six (96) of the General Laws of Minnesota for 1905. Itemized vouchers of all expenses shall be approved as directed by the forestry board.

Sec. 27. Whenever the word "board" is mentioned or referred to in the forestry laws of the state of Minnesota it shall

mean the state forestry board herein created.

Sec. 28. Chapter 22, Revised Laws 1905 and Sections 2505, 2506, 2507, 2508, 2510 and 2515, Revised Laws, 1905; Chapters 82 and 310 of the General Laws of Minnesota for 1905; Chapter 182 of the General Laws of Minnesota for 1909 and all acts and parts of acts inconsistent with this act are hereby repealed.

#### **The New Hampshire Timberland Association**

The lumber companies of the North Country of New Hampshire, who organized an association last year to protect their timberlands from fire, and in cooperation with the forestry commission erected several lookout stations at their own expense, have formed a corporation under the general laws, to be known as the New Hampshire Timberland Association. The objects of the corporation are to preserve the forests from loss by fire, to enlist the aid of the United States and state governments in the work, and to encourage the enactment of such laws as will best serve these objects. The incorporators of the association are the Berlin Mills Company, E. Libby Sons Company, Connecticut Valley Lumber Company, International Paper Company, and the Odell Manufacturing Company.

#### **Oregon**

The new state forestry board is made up as follows: A. T. Buxton, of Forest Grove, recommended by the state grange; George H. Cecil, of the United States Forest Service, recommended by that department to Governor West; L. S. Hill, of Junction City, recommended by the Oregon and Washington Lumbermen's Association; A. P. Sprague, of Portland, recommended by the Oregon Forest Fire Association; Dan P. Smythe, of Pendleton, of the Oregon Wool Growers' Association; Governor West and George W. Peavy, of Corvallis, head of the department of forestry at the Oregon Agricultural College.

An Oregon journal predicts lively times in this board since Mr. Smythe, a wealthy sheep man, is an old-time foe of the United States Forest Service, which has a representative on the board.

## EDUCATION

### **The Biltmore Forest School**

The Biltmore Forest School with fifty students has returned to America after a successful winter session in Germany. The foresters-to-be arrived in New York on the 27th of March. In the German forests the results of German silviculture, forest management, forest finance, forest policy, and forest protection were seen and studied from beginning to end. In the manufacturing institutions there was observed a high quality of work as well as the small quantity of the output; also the economy practiced under the pressure of high stumpage prices. The students had impressed upon them that conservative forestry is practised wheresoever it pays to conserve the forests; that stumpage is being raised wherever the price of the tree pays for the cost of raising the tree; that unlimited competition is detrimental to forestry of a conservative type.

The field work for the month of March included two of the most interesting trips of the winter. In the Spessart Mountains, a district of Bavaria known as the home of the best white oak on earth, were seen oaks up to 400 years old that command a stumpage price of \$170 per thousand feet board measure, on an average. Individual trees—numbers of them—having a stumpage value exceeding \$500. The texture of the timber seems to be particularly fine. The owners (a number of family estates, the Bavarian government and the Prussian government) are in the habit of putting annually on the market a limited number of trees only, so as to maintain the price. This arrangement preserves the forests and a permanent supply of oak timber.

Five days vacation were taken after landing. Then the school went into the Adirondacks to study New York forestry. On the 21st they left for North Carolina, spending the 22d in Washington, acquainting themselves with the United States Forest Service.

### **Elementary School Forestry**

Announcement has been made that courses in scientific gardening and practical forestry are to be added to the curriculum of the Newton (Mass.) Technical High School, under the direction of Irving

O. Palmer, one of the instructors. City Forester Charles Bucknam will assist and his force of men is now at work preparing the land. Near the tennis courts in the rear of the school building the gardens will be located, and all of the product will be used in the cooking classes and served to the gardeners. The nursery will be located at the southerly end of the school, between Walnut street and the athletic field. Arrangements will be made for planting six hundred native trees. The first consignment will consist of two hundred white ash trees. Pupils will be given instruction in planting, grafting, pruning and spraying methods and will be shown the growth of the trees by periods. A number of plants will also be set out and studied. The course would appear to be one in the growing and management of trees, rather than in "practical forestry," but it is a first step well adapted to the circumstances of a city high school.

### **Summer Cruise for Montana Forestry Students**

A summer cruise for foresters and others is planned by the department of botany and forestry of the University of Montana. The course as contemplated would include visits to the best stands of western timber, viewing the operations of the Forest Service on the national forests, nurseries, and plantings, timber sales, protection against fire, grazing, reconnaissance, etc. It would also include visits to the largest milling and logging operations in different sections of the Northwest. Lectures on different phases of forestry will be given at appropriate points. The regions visited will include the northern Rocky Mountains, Puget Sound, the Columbia River, southern Oregon and the sugar pine country of California. It is expected that the party will leave Missoula, Mont., about July 1st, and that about six weeks will be given to the work. It is designed that the membership of the party should include, not only students of professional forestry, but also friends of conservation, practical lumbermen, and others who may wish to study western forestry and lumbering under advantageous conditions. For further information any one interested may address Professor J. E. Kirkwood, University of Montana, Missoula.

## NEWS AND NOTES

### State Control of Private Property

A decision of the Circuit Court of Appeals in the Oklahoma gas case seems to establish the status of a state's rights over the use of its natural resources:

A state may pass laws to regulate the management of private forests and of private property in land generally. (Opinion of the Supreme Court of Maine, March 10, 1908.)

A state as quasi sovereign and representative of the interests of the public has a standing in court to protect the atmosphere, the water and the forests within its territory, irrespective of the assent of the private owner. (Supreme Court of the United States, April 6, 1908.)

But a state, when once it has permitted property in a natural resource (natural gas) to pass into private hands, cannot maintain its right to protect that resource by compelling the owner of it to refrain from engaging in interstate commerce, any provision of the state constitution to the contrary notwithstanding. (Circuit Court of Appeals, April 7, 1910.)

### A Small Forest Reserve for Illinois

Simeon West, a wealthy resident of McLean County, Illinois, has given to the county a virgin timber tract of twenty acres. Should the county ever undertake to use this tract for any other purpose than a public park or forest the title will revert to the heirs of the donor. Mr. West hopes that his action will be an inspiration to others to do likewise.

### Catalpa by Wholesale for Arbor Day

From the cities of Columbus, Kansas City, and Philadelphia come news of the enterprise of local merchants in furnishing the children trees for Arbor Day planting. In Columbus 50,000 little catalpas were so provided, in Kansas City, 100,000 of the same tree, and in Philadelphia, 400,000—also catalpas. It is not necessary nor would it be just to question the motive of these gifts to the public. If they were made for advertising purposes it is a kind of advertising that we may welcome. It may be open to question whether it is well to make all these contributions catalpas. For the middle west the hardy catalpa is one of the most serviceable of trees, but

for Philadelphia, it may be questioned whether it was the best tree that could be chosen. It is to be hoped that due care was exercised to obtain the right variety, for it would be a misfortune to have so many trees planted of the *bignonioides*, and those who investigated catalpa at all know how difficult it is to distinguish that very disappointing tree from *speciosa*. In Philadelphia fifty large trees (not catalpas) were given to eleven schools by the Pennsylvania Forestry Association.

### The Delaware & Hudson Railroad's Forestry Work

At the nursery of the Delaware and Hudson Railroad Company at Bluff Point, Lake Champlain, the railroad is growing thousands of Norway spruce and other conifers for use in reforesting waste land in the Adirondacks and other places along the Saratoga and Champlain divisions. At Oneonta the company is growing red oak seedlings for the purpose of providing timber for ties. The company has decided to devote three acres to a nursery for the growing of red oak seedlings. The company plans to plant over 1,000,000 red oak trees, most of which will be furnished from this nursery. The industrial department of the Delaware and Hudson in collaboration with the superintendent of woodlands, Mr. Bristol, is preparing a booklet to be issued this spring in which the subject of planting trees is to be brought to the attention of farmers and others along the company's line. In addition to the distribution of the pamphlet the company will offer to farmers and small land owners the advice and instruction of Mr. Bristol free of charge.

### New England Railroads Waking Up

It is announced that a railroad bureau for the industrial development of New England has been organized and will be opened at Boston May 1. It will be under the control of the New Haven, Boston and Maine and Maine Central railroad systems and will have the title of the New England Lines Industrial Bureau. Its head will be William H. Seely, now general freight and passenger agent of the Central New England Railroad.

The object is the promotion by the influence of the three railway systems of

every form of industrial development in New England, notably farming, fruit culture, dairy interests and every form of soil production, as well as factory industries and forestry and forest preservation. Later it is planned that the bureau develop various agencies throughout New England for the same industrial purposes. The expense of the enterprise will fall upon the three railroad corporations.

The plan has been under consideration for some years by the New Haven company and was expedited by signs of a farming revival in New England, as shown by the census returns and the larger values of New England farms, as well as their adaptation to new products, especially in the line of scientific fruit culture. It is time that the New England railroads learned something from the development work of southern and western roads. Hitherto they have done little to help their section.

#### **The Adirondack Lumber Cut Decreasing**

Statistics collected by Superintendent of State Forests Pettis of New York indicate that timber operations in the Adirondacks are decreasing owing to a lack of available timber. The amount of lumber cut in 1910 as reported to the state, is about 516,000,000 feet, board measure. This is a decrease of nearly 100,000,000 feet in the last year. The amount cut for pulp wood last year was considerably greater than that cut in 1909, but while the total amount of timber cut for all commercial purposes was more than a billion feet a year in 1908 and 1909 the total was considerably below the billion mark in 1910.

#### **The Protection of Native Plants**

The Society for the Protection of Native Plants has printed on cotton for outdoor use notices reading:

##### **SPARE THE FLOWERS**

Thoughtless people are destroying the flowers by pulling them up by the roots or by picking too many of them.

CUT what flowers you take, and leave plenty to go to seed.

These notices can be obtained from the secretary of the society, Miss M. E. Carter, Boston Society of Natural History, Boston, Mass. We should like to add to the above notice that too many wild flowers are picked without any special object. Many of our wild flowers that are beautiful in their own homes lose almost immediately their freshness and charm when picked. Why not leave them where they grow for others to enjoy? Some people when in the woods and fields have a mania for picking every flower they see, although often it is thrown away without even being carried home.

#### **Pennsylvania's Thrifty Forest Policy**

E. A. Ziegler, director of the Pennsylvania Forest Academy at Mont Alto, gave a lecture in the Lehigh University forestry course last month. Speaking of the work of the state he said: "The Pennsylvania state expenditures for forestry are proceeding on an economical and safe basis and a valuable state property is being created with a net income promised, beside the invaluable benefits of water, creation of raw materials for large industries and the building of homes in the forests themselves, and the financial advancement of the entire state." Mr. Ziegler described the method and work of the forest academy, which trains foresters for the state service, graduating ten each year, and discussed at length the cost of growing forests and probable returns.

#### **Frank J. Phillips**

The Forest Club Annual of the University of Nebraska, have an appreciate note by F. B. Moody on Professor Phillips:

"With deep regret the announcement is made of the sudden and untimely death of Frank J. Phillips, professor of forestry in the University of Nebraska. He died at his home in Lincoln, February thirteenth, nineteen hundred eleven. Professor Phillips was born in Grandville, Michigan, September twenty-fifth, eighteen hundred eighty-one. After graduating from the Grandville High School he worked his way through the Michigan Agricultural College, and completed the work in nineteen hundred three with the degree of bachelor of science. The same year he entered the branch of extension in the bureau of forestry studying forest conditions throughout the middle west until the fall of nineteen hundred four. His intense interest in forestry together with his great love for outdoor life caused him to take up that study in the University of Michigan. Forestry School where he received the degree of bachelor of arts in nineteen hundred five, and the degree of master of science in forestry in nineteen hundred six. After completing this course in the university he received an appointment as forest assistant in the Forest Service and spent a year in the southwest. In nineteen hundred seven he was appointed professor of forestry in the University of Nebraska, which position he held until his death. Prof. Phillips was a self-made man in every sense of the word. By hard knocks he had learned the practical side of forestry and his knowledge, coupled with keen powers of observation and a brilliant mind, served to make him a splendid leader and teacher, whose enthusiasm, cheerfulness and great appreciation of the efforts of others, will leave a lasting impression upon all who knew him."







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